SAFE DRINKING WATER

HEARINGS

BEFORE THE

SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

S. 1866

A BILL TO ASSURE SAFE DRINKING WATER

AND

S. 2131

A BILL TO AMEND THE SAFE DRINKING WATER ACT, TO PROVIDE FOR THE PROTECTION OF CERTAIN RECHARGE AREAS OVERLYING SOLE SOURCE UNDERGROUND WATER SUPPLIES

MARCH 29, MAY 19, 26, AND JULY 28, 1982

SERIAL NO. 97-H51

Printed for the use of the
Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE
95-699 O WASHINGTON: 1982

S321-38

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ROBERT T. STAFFORD, Vermont, *Chairman*

HOWARD H. BAKER, Jr., Tennessee
PETE V. DOMENICI, New Mexico
JOHN H. CHAFEE, Rhode Island
ALAN K. SIMPSON, Wyoming
JAMES ABDNOR, South Dakota
STEVE SYMMS, Idaho
SLADE GORTON, Washington
FRANK H. MURKOWSKI, Alaska

JENNINGS RANDOLPH, West Virginia
LLOYD BENTSEN, Texas
QUENTIN N. BURDICK, North Dakota
GARY HART, Colorado
DANIEL PATRICK MOYNIHAN, New York
GEORGE J. MITCHELL, Maine
MAX BAUCUS, Montana

Bailey Guard, *Staff Director*
John W. Yago, Jr., *Minority Staff Director*

Subcommittee on Toxic Substances and Environmental Oversight

SLADE GORTON, Washington, *Chairman*

ALAN K. SIMPSON, Wyoming
JAMES ABDNOR, South Dakota
FRANK H. MURKOWSKI, Alaska

MAX BAUCUS, Montana
QUENTIN N. BURDICK, North Dakota
GARY HART, Colorado

CONTENTS

MARCH 29, 1982

Page
Gorton, Hon. Slade, U.S. Senator from the State of Washington 1

WITNESSES

Barr, J. James, chairman, government relations, National Association of Water Cos., accompanied by C. Robert Morris, associate executive director ... 2
Prepared statement 41, 69
Carney, Hon. William, a Representative in Congress from the State of New York 17
Deal, William F., executive vice president, International Bottled Water Association, accompanied by Timothy L. Harker, general counsel 30
Prepared statement 113
Downey, Hon. Thomas J., a Representative in Congress from the State of New York 15
Hopkins, Ed, research director, clean water action project, American Clean Water Association, accompanied by Milos Krofta, Krofta Engineering Corp.; Lawrence Kong Pu Wang, Lennox Institute for Research; and Arthur MacNeill, EPA drinking water demonstration project 33, 35, 36, 37
Prepared statements 137, 148, 155, 177
McNew, Daniel W., vice president, Water Quality Association, accompanied by Robert H. Doyle, Washington legal counsel and Dr. Duane D. Nowlin, chairman, science advisory committee 24
Prepared statement 83
Stacha, John H., president-elect, American Water Works Association, accompanied by Foster S. Burba, Water Utility Council 11, 13
Prepared statements 71, 77

ADDITIONAL MATERIAL

General Accounting Office, report of entitled, "States' Compliance Lacking In Meeting Safe Drinking Water Regulations" 189
S. 1866, S. 2131 .... 221, 234

MAY 19, 1982 (p. 247)

OPENING STATEMENTS

Baucus, Hon. Max, U.S. Senator from the State of Montana 248
Gorton, Hon. Slade, U.S. Senator from the State of Washington 247
Moynihan, Hon. Daniel Patrick, U.S. Senator from the State of New York 248

WITNESSES

Blass, Gregory, representative, Suffolk County Legislature 284
Prepared statement 396
Cohalan, Peter F., county executive, Suffolk County, N.Y. 277
Prepared statement 390
Fallon, Mary A. supervisor, town of East Hampton, N.Y. 283
Harpster, Robert, executive director, League of Iowa Municipalities 271
Prepared statement 376

Page
Hayes, Hon. Janet Gray, mayor, San Jose, Calif., accompanied by Frank Shafroth, legislative counsel, National League of Cities 272
  Prepared statement 384
Jorling, Thomas C., director, Center for Environmental Studies, Williams College 257
  Prepared statement 312
Lang, Martin, supervisor, town of Southampton, N.Y. 281
Neal, Robert, chairman, National Drinking Water Advisory Council 250
  Prepared statement 287
Tripp, James T. B., counsel, Environmental Defense Fund 263
  Prepared statement 321
Warren, Jacqueline, Natural Resources Defense Council 266
  Prepared statement 337

ADDITIONAL MATERIAL

East Hampton, town of, resolution of 416
Statements:
  Foley, John J., county legislator, County of Suffolk 422
  Group for the South Fork, Inc 419
  Huntington Conservation Board 418
  New York State Legislative Commission on Water Resource Needs of Long Island:
    Cantor, Edward N., co-executive director 410
    Newburger, May W., assemblywoman 402

MAY 26, 1982 (p. 423)

Gorton, Hon. Slade, U.S. Senator from the State of Washington, opening statement of 423

WITNESSES

Boyd, Donald, president, Association of Metropolitan Water Agencies 450
  Prepared statement 505
Davis, Jasper, Davis Water & Waste Industry, accompanied by John Sheer, president, Water & Waste Water Equipment Manufacturers Association 442
Eidsness, Eric, Assistant Administrator, Office of Water, Environmental Protection Agency, accompanied by Vic Kimm, Director, Office of Drinking Water and Gordon Robeck, Director, Drinking Water Research 432
  Prepared statement 470
  Responses to written questions 494, 501
Lowthian, Ken, superintendent, Seattle Water Department, accompanied by William Stafford, Seattle Office of Intergovernmental Affairs 424
Markwood, Ira, manager, public water supplies, Illinois EPA 429
  Prepared statement 453
Singer, Grace L., researcher, Princeton University 444

ADDITIONAL MATERIAL

Colorado River Commission, resolution of 509
Statements:
  Arvada, Colo., city of 513
  Alaback, Judy K 516
  Barr, Bobby 517
  Bellingham and Whatcom County District, Department of Public Health 518
  Collins, Heather S 520
  Flanagan, Ruth M 519
  Friends of the Earth, Northwest Office 522
  Harley, Sue 526
  Hendrickson, Dr. Sarah 521
  Hilke, Margaret M 527
  Holcombe, Robert A 528
  Howell, Bill 530
  Larsen, Paul 532
  Leon, Richard J., and Sharon 533
  McCabe, Charleen and Thomas 541
  New England Water Works Association 534

Statements—Continued Page
Read, Sharon B 536
Samsam, Marion 538
Southwest Environmental Service 539
Zahn, E 542

JULY 28, 1982 (p. 543)

Gorton, Hon. Slade, U.S. Senator from the State of Washington, opening statement of 543

WITNESSES

Briggs, Peter B., Anaconda Minerals Co., on behalf of the American Mining Congress, accompanied by Alan Egler, Du Pont Chemical Corp. 576
Prepared statement 689
Burke, Thomas, New Jersey Department of Environmental Protection 563
Prepared statement 659
Cohen, Philip, Chief, Water Resources Division, U.S. Geological Survey, accompanied by Jack B. Robertson, Chief, Office of Hazardous Waste Hydrology, and Gordon Bennett, Chief, Ground Water Branch 544
Prepared statement 582
Fox, Thomas P., general manager, Edwards Underground Water District, Texas 557
Prepared statement 624
Miller, David W., Geraghty & Miller, Inc. 551
Prepared statement 620
Moore, Robert, Connecticut Department of Environmental Protection 567
Prepared statement 669
Steinberg, Frederick, senior attorney, PPG Industries, Inc., on behalf of the Chemical Manufacturers Association 574
Prepared statement 681
Whitney, Clint, California Water Resources Control Board 569
Prepared statement 674

ADDITIONAL MATERIAL

Statements:
States of:
Idaho 687
Vermont 717
Tucson, Ariz., city of 751
American Dental Association 754
Sierra Club, Gulf Coast Regional Committee 756

SAFE DRINKING WATER

MONDAY, MARCH 29, 1982

U.S. SENATE, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,

Washington, D.C.

The subcommittee met at 10:15 a.m., in room 4200, Dirksen Senate Office Building, Hon. Slade Gorton (chairman of the subcommittee) presiding.

Present: Senators Stafford, Gorton, and Baucus.

OPENING STATEMENT OF HON. SLADE GORTON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator GORTON. Good morning. This is a hearing of the Subcommittee on Toxic Substances and Environmental Oversight, a subcommittee of the Senate Environment and Public Works Committee. The purpose of this hearing is to receive testimony regarding the Safe Drinking Water Act. Congressional authorization of the safe drinking water program, administered by the Environmental Protection Agency, expires on September 30, 1982. It is the responsibility of this subcommittee and the Environment and Public Works Committee to report a reauthorization bill to the full Senate so as to enable a continuation of the EPA's drinking water program.

Maintaining safe drinking water for America's cities and communities is an important and appropriate purpose for Federal regulatory activity. Yet this year, drinking water quality has been obscured by important congressional consideration of clean air and hazardous wastes.

On November 18, 1981, I introduced S. 1866, the Safe Drinking Water Regulatory Reform Act, which, if adopted, would make several changes in the substance of the Safe Drinking Water Act. As I stated on the day the bill was introduced, it was my intention that the bill serve as a vehicle for raising the key substantive issues of the Drinking Water Act. This hearing today, and the second which we hold this Wednesday, will be conducted for the same purpose. I believe that thoughtful discussion of the salient provisions of the Drinking Water Act will guide this committee to appropriate amendments which can be made in the context of reauthorization of the Safe Drinking Water Act.

On February 23, 1982, Senator Moynihan introduced S. 2131, a bill which proposes amendments to that portion of the Safe Drinking Water Act relating to sole source aquifers. I joined him as a cosponsor. I did so because I felt that S. 2131, like S. 1866, raised issues which were worthy of discussion before this subcommittee.

I will not address the merits of the proposals made by either bill at this time. It is my intention to await the completion of these hearings before defining my position on how the Safe Drinking Water Act should be amended.

With that I should like to welcome as our first witness, Mr. J. James Barr, chairman of the government relations, National Association of Water Companies.

I should, first however, ask the chairman if he wants to make an opening statement?

Senator **STAFFORD**. Thank you, Mr. Chairman. I don't have an opening statement, and I am prepared to listen to the witnesses here today.

Senator **GORTON**. Thank you.

Mr. Barr, would you introduce those who are accompanying you and then proceed?

STATEMENT OF J. JAMES BARR, CHAIRMAN, GOVERNMENT RELATIONS, NATIONAL ASSOCIATION OF WATER COMPANIES, ACCOMPANIED BY C. ROBERT MORRIS, ASSOCIATE EXECUTIVE DIRECTOR

Mr. **BARR**. I certainly will. Thank you, Mr. Chairman.

With me today is Bob Morris, associate executive director of the National Association of Water Companies.

My name is J. James Barr. I am system company president of the midwestern division of American Water Works Service Co. I am here today representing the National Association of Water Companies as chairman of its government relations committee and a member of the association's executive committee.

Before discussing the specific issues which are the subject of this hearing, I think it is important to define the context in which our comments are made.

We must allow hindsight to be instructive. Far too often since 1974 there has been an adversarial nature to the relationship between water suppliers, the regulatory agencies and various groups representing environmental concerns. Consequently, progress toward the objectives set by the Safe Drinking Water Act has been impeded. Everyone involved has a duty to reassess their role in this relationship. The controversy which has developed clearly indicates something is wrong. It makes no sense three groups with such similarity of purpose disagree so often.

We cannot expect our collective efforts to reassure anyone when regulation is legally challenged as too restrictive by the industry and too lax by environmental organizations.

We must define clearly the causes of this result and eliminate them.

Notwithstanding deterrents caused by those regulating and regulated, the Safe Drinking Water Act has provided for improvement in the quality of water supplied certain people in the United States. The act was and remains unnecessary for some, but meaningful for all.

NAWC supported the Safe Drinking Water Act in 1974, and remains today solidly behind the purposes of this legislation.

There is a principle involved in water supply and its regulation which deserves early emphasis. Frequently, drinking water quality is adversely influenced by man more so than nature. Regulation under the SDWA cannot and should not be expected to take the place of aggressive control of the sources of water pollution. The Clean Water Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and the Comprehensive Environmental Response Compensation and Liability Act must collectively provide adequate regulatory authority to substantially reduce the issues addressed by the Safe Drinking Water Act.

NAWC believes the issues addressed in S. 1866 are of the highest priority. Further, NAWC supports this bill because it believes that it represents effective and reasonable amendments to the act which will improve regulation of the water supply industry in the interest of the consumers they serve.

It is with this thought in mind NAWC offers the following comments. A more detailed statement is simply a copy of the statement we presented to EPA at its recent hearings on administrative and legislative issues.

Our thoughts and suggestions are offered constructively and are intended to offer solutions to difficult issues.

The standard included in the Safe Drinking Water Act which triggers regulation should be changed. The act now calls for regulation if something "may" have adverse health significance. Once a regulation is promulgated on this basis it may be deferred or set aside by exemption or variance if it is determined no unreasonable risk to health would result. Virtually everything "may" have adverse health significance to someone. We do not possess, nor should we strive to acquire, the resources required to eliminate everything which "may" be harmful. Preventing unreasonable risk, which provides for balancing the burdens of regulation with the probability harm will occur and its severity if it does, will improve regulation.

We understand EPA routinely prepares evaluation of risk and cost analysis as part of its regulatory process. On these issues the provisions of proposed legislation represents reasonable and logical extensions of current practice under the existing act. We support this. If this work is done and serves some role in the regulatory process, why not let it see the light of day? At the heart of the regulatory reform debate lies the notion that regulations should be worth their cost, that agencies should expose their important analyses to public scrutiny, and that courts should have statutory guidance to review an agency's work. The prospect for judicial review seems to be the basis for resisting these requirements. Perhaps with the benefit of the work EPA would do to comply, presuming its validity, court challenge to regulation may be avoided because prospective litigants will better comprehend the basis for regulation.

Our opinions regarding operation and maintenance regulations and the authority to designate treatment techniques are based on a common premise. Regulation under the Safe Drinking Water Act should prescribe performance standards. The water supply industry should be allowed the flexibility to utilize its own expertise to satisfy these standards. It is with all due respect we contend EPA will never possess the practical knowledge equal to that which is available to water supply professionals. Much more can be accomplished by devoting the tremendous resources EPA possesses toward the scientific definition of appropriate water quality which will not pose an unreasonable risk to public health. Water supply entities which serve the majority of people in this country will satisfy this definition and in the process will create technology which is new and innovative. Those who do not measure up to the standard deserve prodding or forceful intervention—whatever it takes to bring them into compliance. To gain insight into how ill-advised the specification of a treatment technique is, one need only review what happened when granular activated carbon was proposed for the control of organic chemicals in drinking water.

In that instance EPA proposed costly treatment technique regulations intended to remove synthetic organic chemicals from drinking water. The proposal would have cost the water supply industry, and therefore consumers, over $1 billion by EPA's estimate, and nearly $5 billion by industry estimates. The link between synthetic organic chemicals and adverse health effects, and the ability of GAC to remove them, were never established. People representing widely disparate interest, including many in the Congress, criticized the proposal severely, and EPA eventually withdrew it. The consequences of making this proposal without a sufficient evidentiary basis are what one might expect and what one should avoid—debilitating controversy that could undermine support for drinking water programs generally, and considerable time, talent, and other resources wasted, in and out of government, in making, defending, and challenging the proposal.

There are a number of issues under the general heading "Administrative Procedures and Judicial Review" included in S. 1866. I will highlight our position on several issues which are perhaps most significant.

The National Drinking Water Advisory Council should be able to present its opinion on a pertinent issue and that opinion should be considered. The Safe Drinking Water Act does not require EPA to consider these opinions. We believe it should.

We do not understand why the District of Columbia Court of Appeals is the only forum for judicial review. It seems to imply no other jurisdiction can deal with the issues presented by environmental regulation. NAWC contends it is more appropriate for the issues requiring litigation to be heard in the court of appeals representing the area which is impacted by the challenged regulation.

This, of course, may well be, in certain instances, the District of Columbia, or it may be the court in San Francisco. Difficult legal questions arise in these proceedings. Why not take advantage of the full range of judicial expertise throughout the country?

S. 1866 contains language prescribing membership criteria and procedural matters for the NDWAC. We believe this legislation would enhance the role of the advisory council and improve its contribution to EPA. Each segment of the population concerned directly with public water supply is represented equally by the provisions of the Senate bill. Furthermore, those granted the privilege to serve in this important endeavor are afforded a means to contribute both collectively and individually to the efforts of the Agency.

It is our view interim regulations were intended to serve the purposes of the Safe Drinking Water Act on a short-term basis, not as they have now for almost 8 years. The term "interim" itself readily implies limited existence. By virtue of the interim regulation and its amendment, a perhaps complex but yet clear-cut process of regulation has been sidestepped. We think this ducks the purpose Congress intended in the Safe Drinking Water Act. It calls for the establishment of primary and secondary drinking water standards. Clearly, the intention was to prompt final standards in the form of revised regulations for those contaminants found in drinking water not covered by the interim regulations. The concept of interim standards recognized the immediate need for something to be done. Certainly enough time has passed to finalize this process.

Contamination of ground water has recently surfaced as a new frontier for water quality problems. The provisions of the act under sole source aquifer do nothing to really address this issue. All water sources should be afforded equal attention in the promulgation of regulations. The ground water protection stragegy EPA has developed we believe to be a step in the right direction. We encourage added attention be given this subject.

The SDWA now requires public notification in the event of violation of the act or regulations prescribed thereunder. Rigid steps are prescribed for notification. Consequently, the mere failure to submit a report timely produces exactly the same notification to the public as required in the event of serious drinking water contamination. It serves no worthwhile purpose to undertake the notification process when the consequence of the violation of the act does not represent a significant health issue.

Why, people ask, are you telling me this if I don't have to worry about it? Let us stop undermining the value of notification by crying wolf.

We believe it is much more effective to require public notification only when the violation of the Safe Drinking Water Act presents an unreasonable health risk to those served. Primacy agencies should have discretion to decide when public notification is required.

We dislike the concept of "tiered" regulation. If a contaminant should not be in water then it should not be in water supplied by any water utility covered by the Safe Drinking Water Act. Scientific regulation is beneficial to all who receive water service. Size of a utility is irrelevant to the protection regulation provides. It may bear on a utility's ability to comply. If, for some reason, a utility need not or cannot immediately comply with a regulation prescribed under the act, there are provisions for a variance or exemption.

NAWC concurs with the concept of developing "SNARLS." We believe, though, the process should be pursued with full awareness by all concerned that a SNARL, in and of itself, does not represent the basis for regulation.

We have already indicated we see no basis to differentiate between large and small systems in the regulatory process under the Safe Drinking Water Act. We recognize certain cases deserve individual consideration. This is better left up to the States through utilization of the variance and exemption process. These judgments will be most effective when they consider objectively the implications associated with specific circumstances. If the timetables related to these sections are improper, then they can be changed.

Thank you for the opportunity to present the views of the National Association of Water Companies regarding the Safe Drinking Water Act. We sincerely hope they are of value. I assure you they are meant to be constructive.

If I might be allowed a personal note here, I will say that this is a very special day in my life. This is the first time I have ever had the chance to address the U.S. Senate, and it is indeed a special privilege, one we deeply appreciate, and one that is special for me personally.

I will be glad to answer any questions at this time.

Senator GORTON. Thank you, Mr. Barr, you are very welcome here.

My first question goes back to your first point you made. Would it be fair to characterize the present grounds for setting standards "may have adverse effect on the health of persons," as being analogous to the primary health standard in the Clean Air Act, and the proposals which are made in this bill analogous to some of those which we designed to change that rigid health standard in the Clean Air Act?

And if it is an appropriate parallel, why should drinking water be treated differently than air?

Mr. BARR. Senator, I sense there is perhaps some similarity in the two areas related to the change.

Perhaps it is involved in terms of the wording or the triggers for regulation. I guess I must acknowledge at the outset of my answer, I think I am a good deal more familiar with the drinking water than——

Senator GORTON. I know that and I don't want to treat you wrong here.

Mr. BARR. Safe drinking water is more of a local issue context than perhaps the clean air situation may be.

The change that is proposed by Senate bill 1866 which we support, has attracted our interest in that it seems to require an effort to balance some of the issues involved in regulation and force some consideration of the merits and demerits, the advantages to be gained versus the costs to be incurred. We think that is an appropriate consideration, allowing for State regulation prime considerations involved in the activity, and recognizing that there is a limit to what can be accomplished in the operation of water supply system.

Senator GORTON. Let me go on to follow that up by stating what you already know, that the administrator, pursuant to present authority, is promulgating interim maximum contact contaminant levels for a number of chemicals. In your opinion, do any of those contaminents have the potential to be solicited under the present law, but are of a nature such as they fail to pose it on reasonable risk to the health of persons and those included in S. 1866?

Or to phrase it differently, would there be a different listing, would some of these contaminants not be on the listing on the standards set forth in S. 1866?

Mr. **Barr**. I think that is perhaps so for one standard I can think of; namely, the total trihalomethane strain. There has been a good deal of controversy centering around that particular standard, and perhaps it was that rulemaking process as well as the process that I have referred to earlier wherein we were dealing with a granular activated carbon regulation, that really served to bring this issue to the forefront.

There seems to be a great deal of difference of opinion and controversy within the professional health area about that particular regulation.

Senator **Gorton**. Let me interrupt you and get one thing clear for the record here. With the single exception of total trihalomethane, every other contaminant would be an appropriate finding under the standards you now propose?

Mr. **Barr**. Well, Senator, what I am saying is that standards other than that standard were basically those that were either accepted or in existence in advance of the Safe Drinking Water Act itself, and I do not really view them as significantly different than where we were prior to the act.

Senator **Gorton**. In what respect, however, would this last one have been inappropriate if the standards of the bill which you back had been in effect at the present time?

Mr. **Barr**. Well, I am not even certain I want to suggest that I have come to the conclusion that the regulation would be different per se. But I do think that with a different trigger perhaps there would have been a good deal more evaluation of the costs and benefits associated with that proposed regulation, that may well have influenced the level at which it was set.

I think it certainly would have aided the industry in terms of providing a good deal more concrete information that we could have dealt with in understanding it ourselves, and I say that in the view it would serve to provide information to deal with in the context of the health issues involved in relationship to controversy that developed over that particular regulation.

Senator **Gorton**. On a different subject now, you propose changes removing Administrator's authority to describe these treatment tests, I assume you mean that water suppliers are in a better position to evaluate the necessity for treatment techniques than the Administrator of EPA? Is that the basis for your views on that subject, and if it is your conclusion, why do you feel that the suppliers are in a better position than EPA?

Mr. **Barr**. Senator, I think one of the key issues involves the situation when a treatment technique is prescribed, a specific treatment technique, that seems to presume there is no other way to accomplish achievement of a water quality goal or criteria.

It is my impression from the experience that I have had that there are generally a number of different ways you can achieve a specific quality standard. The prescription of a specific treatment technique basically takes away our ability to develop technology, if you will, to innovate or use various different treatments, which in some instances may be more cost effective for a particular utility than for another. That specific definition really ties your hands in terms of the ability to use those different approaches.

Our preference leans toward the definition of "scientifically based water quality goals," with the very definite impression that utilities should comply with those goals, and assume the responsibility to develop effective meaningful technology or use existing technology that is least cost oriented to achieve that goal.

Senator **GORTON**. Senator Stafford.

Senator **STAFFORD**. Thank you, Mr. Chairman.

S. 1866 and several water supply groups advocate redefining some memberships in the Drinking Water Council so as to better advise EPA for better regulations.

My question then is there any risk in advising members to the Council so that it becomes too heavily weighted for those who are already in it?

Mr. **BARR**. Senator, I don't believe so. If my recollection is correct, the change proposed by Senate bill 1866 would only add one additional member to the committee, and it would provide for an equal balance of the interests involved to each area to be represented by an equal number of people on that committee.

Frankly, I don't perceive that the change would encumber the regulatory process, and as we see it, it would perhaps add to it, make it more effective.

Senator **STAFFORD**. Some of the testimony before this subcommittee will argue that there is growing concern that chemical contaminants in drinking water are contributing to serious diseases such as cancer, and that it is therefore increasingly important to leave the safe drinking water intact because it embodies an approach in favor of protecting health. How do you respond to that?

Mr. **BARR**. Senator, I don't believe the changes proposed by the Senate bill will effectively eliminate that preventive aspect of the bill.

It is perhaps a finer point in terms of wording, but I have understood the concept of reasonable risk—and I say this as a nonlawyer—is a fairly well-established process in terms of its definition. I think it would lead to that balancing of cost versus benefits that would be constructive. But from our perspective, I don't see this as an effort to attempt to reduce the ability to deal with preventive health approach, but rather make it more effective.

Senator **STAFFORD**. That leads me to the next question I have.

S. 1866 would substitute this phrase "pose an unreasonable risk on the health of persons," for the language of current law which states, "It may have adverse effect on the health of persons."

To my mind that does make a rather substantial change. Some of the testimony before this subcommittee will contend the present word "pose" will eliminate the nature of the act, and that the "unreasonable risk" language would require serious documented cases of disease before EPA could regulate it.

How would you comment on these points, Mr. Barr?

Mr. **BARR**. Well, again Senator, I guess I do not see that the change really prevents regulation that would be designed to protect adequately public health in the water supply industry.

I have never understood the allegation that that change effectively requires people to incur a disease before a regulation can be promulgated. Rather, it is an effort to seek a way to get away from what seems to be a rather abstract term "may," and as I said in my comment, it seems we have reached the point where the technology, if nothing else today, that virtually everything and anything may have some effect on someone's health. And I have serious doubts whether the industry has the ability to develop the operations to eliminate everything that "may" have that effect.

We sense that Senate bill 1866 would direct regulations to achieve water quality that effectively protects public health. I think it certainly can be future oriented. I do not see that it requires proof of disease in and of itself before regulation can be set.

Senator **Stafford**. Reading the proposed substitute language "pose an unreasonable risk on the health of persons," that seems to me it would require too high a degree of proof that there is a risk. I have considered the possibility of substituting the word "significant," to read "pose a significant risk on the health of persons."

I have looked at it and studied it by striking out the word "unreasonable" to read "pose a risk on a person."

In any event, this is something for the subcommittee and even possibly the full committee to deliberate on. I think the words "unreasonable risk" requires too high a degree that serious harm is being done before anything can be done by EPA.

Mr. **Barr**. Senator, I certainly appreciate that, and I would definitely want to indicate to you that we are focusing on the words as written. There may very well be ways to accomplish the same thing, and we would be happy to consider them.

Senator **Gorton**. Senator Baucus.

Senator **Baucus**. I would like to follow up on the questions of both Senators Gorton and Stafford.

In your view, what standards could EPA set under the "may" language, but not under the "unreasonable risk" language? I am trying to figure out what the actual difference is in your mind.

Mr. **Barr**. Senator, I am not so certain that it is really an issue of what could or could not be done, in terms of setting standards, as much as I am inclined to think it may have more impact on the level at which a standard may be set.

Senator **Baucus**. Can you give us an example?

Mr. **Barr**. As I said, perhaps the trihalomethane standard.

Senator **Baucus**. In addition to that?

Mr. **Barr**. Well, there are a number of potential standards related to the organic chemical category, for example, that is clearly a developing area of regulation. I think it is generally agreed in the industry and health community by EPA that something needs to be done with various organic chemical contaminants. There are lists several pages long like chloroform, carbontetrachloride—there are a number of potential chemicals in that area that need to be dealt with.

Senator **Baucus**. So that I understand you, are you saying that when those chemicals are dealt with, that the result may have an adverse effect, compared to the other language "unreasonable health risk"?

Mr. **Barr**. I sense it is likely that the consideration of a different trigger for regulation may very well impact or influence that regulation.

Senator **Baucus**. It is possible it might, but can you tell me in your view where——

Mr. **Barr**. In a specific case, you mean?

Senator **Baucus**. Yes, just a ball park area where EPA would come out under one standard as compared to another with respect to organic chemicals.

Mr. **Barr**. Well, perhaps referring back to the GAC regulations. I think it is entirely likely that regulation might have received an entirely different approach had the trigger been different, had the trigger required some type of evaluation of the burden of that regulation compared to what might be achieved.

Senator **Baucus**. What I am getting at is——

Mr. **Barr**. I know, but I am not sure I have reached any conclusion, but that change would specifically influence a specific contaminant.

Senator **Baucus**. I want to know what the different results would be under the different standards. As a practical matter, what is the difference?

Mr. **Barr**. Well, I have sensed that the change would have some impact on the level of certain standards here, and that impact may increase the acceptable level in some instances; it may reduce it, depending on an evaluation that would lead to the balance between the cost of the regulation and the benefit to be derived,

It is really, I guess, not so much that our concern is with the specific words in the change as it is the concept of the change, whereas now we are dealing with regulation generated by something that may have that adverse effect, and that is a very—well, it seems to be very generalized subjective terminology.

Senator **Baucus**. Are you more worried about the process of reaching the result, or are you more concerned about the result that is reached?

Mr. **Barr**. I would say both.

Senator **Baucus**. Are you worrying about the process irrespective of the result?

Mr. **Barr**. Yes, sir; definitely.

Senator **Baucus**. Can you tell me why?

Mr. **Barr**. Again let us look at the GAC regulation that led to so much controversy, so much disagreement within the industry, within the health community, and within the regulatory community.

There was such doubt created whether or not that regulation was or was not the right way to go. It was ultimately withdrawn because of so many of the issues that came up, and we are looking for a change to prevent that.

Senator **Baucus**. Is that the regulation you are referring to on page 4 of your testimony, where it is estimated the cost to be $5 billion?

Mr. **Barr**. Yes, sir.

Senator **Baucus**. Well, did not the act work in that situation?

Mr. **Barr**. Well, I am not so sure that is the workings of the act that generated that, as opposed to reaction to what the act produced. I am inclined to think if there was a different trigger in the regulatory process, than the "may" standard, that that regulation would not have been proposed as it was, and I am inclined to think that it is withdrawn—that its withdrawal was generated by the fact the standard was so controversial, and a good bit of that controversy seems to be of the nature that it could have been resolved before promulgation of that.

Senator BAUCUS. In your association with the industry, do you get any feel for an estimate as to what the cost to industry would have been under, not the present provisions of the act, but say provisions of the Senate bill before us?

Mr. BARR. No, sir; we do not.

Senator BAUCUS. Would there be any difference?

Mr. BARR. I think if the regulation was different it would very definitely have changed the potential cost.

Senator BAUCUS. If you think there would have been a different cost, would it be fair for me to ask what the amount of that cost would have been?

Mr. BARR. I would have no idea in the world, Senator. It would depend on the new regulation.

It is conceivable the cost would increase. I do not want to focus on the point that our concern is cost oriented, because I don't think in and of itself—the magnitude of the cost was the reason for that. Our concern was generally as an industry prompted by the fact there was a substantial pricetag associated with compliance when there was a great deal of uncertainty and doubt about the necessity of the treatment technique, and confronted with that doubt and recognizing those costs are passed on to the customer, the issue comes up, do we impose that cost without solid scientific material.

Senator BAUCUS. Thank you very much.

Senator GORTON. Thank you very much, Mr. Barr.

Our next witness will be Mr. John Stacha, president-elect of the American Water Works Association.

STATEMENT OF JOHN H. STACHA, PRESIDENT-ELECT, AMERICAN WATER WORKS ASSOCIATION, ACCOMPANIED BY FOSTER S. BURBA, CHAIRMAN, WATER UTILITY COUNCIL

Since we are running behind, we would appreciate your willingness to summarize your 11-page statement and it of course will be included in the record in its entirety.

Mr. STACHA. Thank you, Mr. Chairman.

Good morning. The American Water Works Association welcomes the opportunity to appear before you today to express our views on the safe drinking water program—I am John Stacha, president-elect of the association and assistant director of the Dallas Water Utilities. I have with me today Foster Burba, chairman of the AWWA's water utility council and president of the Louisville Water Co., and also James B. Groff, the deputy executive director for Government Affairs.

Since you have the overall text of my statement with you, let me just stress some of the most salient points of my testimony in order to be able to shorten it somewhat for your benefit, but still keep the general text in mind.

First of all, we are generally in support of this legislation. We believe in the substance of the legislation, but there are certain specific aspects that this association has some misgivings on.

First of all, I think it is important that I should say that since the passage of the 1974 act, all of us in the water supply business have been bogged down in the exercise of identification of over-reaction to potential micro-organisms to the point the basic intent of the law has frequently been obscured. The truth of the matter in these 7 years since the Safe Drinking Water Act was passed, the basic needs to assure safe drinking water, such as research, education, and training, have not been adequately addressed.

The science and technology are identifying thousands and thousands of pollutants, but the scientific community has little grasp of the impact here.

Furthermore, the concerns of these chemicals more often than that have resulted in a breakdown of relationships and a loss of credibility among people in our industry and EPA, and also in the States and sometimes with the public.

I think it is important that the Government should set performance standards, conduct research, and provide incentive for compliance, so that the association and its professionals and related organizations should develop the methods of compliance, including the training and educational programs.

I would like to suggest that there be a redirection in that we would suggest three principles for your consideration:

First, the act and its implementation must recognize that professionals are involved in the vast majority of community water supplies. They should have the authority and the flexibility to exercise their judgment in establishing treatment techniques, advising the public, managing resources, et cetera.

Second, maximum containminant levels which have a sound scientific basis should be uniformly applicable to all of the Nation's population. There is no justification for discrimination by establishing different MCL's based upon a system's size, financial resources, or other criteria. The scientific methodology used to develop standards pursuant to the Safe Drinking Act, and those developed in response to similar laws designed to protect public health, must be consistent. Further, standards that trigger EPA regulatory action should not be different from those that trigger public notification, granting of variances, et cetera.

And third, EPA must adjust its regulatory role by moving required responsibilities to the States and increasing its guidance functions. Performance standards, not mandatory treatment techniques, should be the goal of the Federal regulatory agency. In addition to research, the Federal Government could become more involved in training and education demonstration grants. This will insure that water quality is improved, starting where it is most likely to have the more significant results.

I would like to stress that we are 100 years old, an association of professional water supply people; we are not an agency that is opposed to Federal bureaucracy, and specifically the EPA. We share EPA's concern for public health as evidenced by our support of the Safe Drinking Water Act, and as our assistance and development of this, our encouragement of many of the States to assume primacy and force our programs of nationwide education and public awareness.

We believe, however, that the act will not result in any less safe water, if you follow the Senate bill 1866 as you proposed it, but the industry and EPA need to work together for the results of a better and safer water result for everyone.

I would appreciate the opportunity of answering any questions you might have, and I thank you for your courtesies.

Mr. Burba will now address our position on several specific instances, or issues regarding the Safe Drinking Act.

Senator GORTON. I have your testimony here, and it would seem to me that you very largely agree with Mr. Barr, and if so, please just highlight.

STATEMENT OF FOSTER BURBA

Mr. BURBA. Mr. Chairman, I will shorten my testimony because we would like the opportunity to answer any questions you might have for us.

I am Foster Burba, president of the local water utility company and chairman of AWWA's Water Utility Council. Our membership provides water service to over 200 million persons within the United States.

Thank you for permitting us to comment on the issues concerning the Safe Drinking Water Act.

Many of these issues are adequately addressed by changes to the act contained in the legislation introduced by you, Senator Gorton, and in the House by Congressman Gramm. We commend you for preparing and introducing S. 1866. Passage of your bill would solve many of the problems encountered by our members and others for drinking water.

Perhaps the greater concern is the carte blanche drinking water to try and assure a risk-free society without regard to real benefit. This is in accordance with the language requiring EPA to issue regulations for control of substances which in the opinion of the Administrator may have any adverse effect on the health of any persons; and I would like to underscore the words "may" and "any."

This is to control substances which may not pose an unreasonable risk to health or which on the other hand may pose a reasonable risk—or I mean an acceptable risk.

This language forces issuance—or I mean the regulation is required if there is the slightest chance that a substance may pose any risk to humans; such language creates an undue burden as well as the public water supplies which must endeavor to conform to the no-risk requirements of AWWA selection which requires EPA to regulate those substances, which poses a risk to public health. It is not imposing an absolute burden of proof on the agency, it only requires that there be substantial evidence on the record to support regulation.

Another concern is the provision for the agency to propose treatment technologies in lieu of maximum contaminant levels. AWWA believes that professionals can best determine the most effective treatment methods for water systems and its particular problems.

As proposed in S. 1866, we recommend that EPA's approach be through performance standards, that is, maximum contaminant levels rather than specifying treatment techniques.

EPA can tell us what to accomplish but not how to accomplish certain water quality criteria. The evaluation of risk and the benefit cost analyses are important elements of sound decisionmaking. Competing risk must also be evaluated. We are not advocating this.

Instead, we are proposing a suggestion in 1866 that cost be justified by the benefits of safe drinking water. Further, cost estimates should be based on cost to those systems involved and not be on an overall basis.

There should be flexibility of the local community to make choises concerning services to the public. The mandating of costly requirements or benefits not relating to costs preempt that. If the benefits of a program fail to justify the cost, those limited dollars can be better spent. Without substantial analysis, the statutory directive to take costs into consideration has little meaning, and the obvious intent of the current law is frustrated.

We urge you to legislate these revisions. This will bring the emphasis on the development of revised national primary regulations rather than deepening the perpetuity of entering into regulations which were to be temporary.

We support provisions for possible justifiable review by the U.S. Circuit Court of Appeals, where a substantial injury will occur. The association supports the language in 1866 addressing the role of the National Drinking Water Advisory Council.

I have spoken with several AWWA members who have served on the council. They believe, as does the association, that legislating these revisions will significantly strengthen the council and assist it in carrying out its responsibilities regarding provision of safe drinking water for the public.

Mr. Chairman, we are concerned about public notification in the event of any violation of the act, and we concur in what Mr. Barr, the previous person, related in this regard.

In conclusion, I would like to emphasize there are three basic responsibilities regarding drinking water:

One. Determine what is in the water;

Two. What are the effects of the constituents found; and

Three. What must be done about them.

Further, there should be increased research concerning basin drinking water.

Our mutual dedication to the provision of safe drinking water cannot be shunted aside by emotional overreaction to substances of which we know very little. Expanded health research and monitoring are necessary in order to deal confidently with present and future water supplies.

As Mr. Stacha indicated, we will be glad to answer any questions you might have.

Senator GORTON. We will defer questions to you because Senator Moynihan is here now with two Members of Congress, and we would like to hear from them. We will call you back for questions in a moment.

I would like to recognize Senator Moynihan now; he is the cosponsor of S. 2131, and both he and members of his congressional delegation wish to speak to us. And, in addition, Senator, there will be additional witnesses on Wednesday.

Senator **Moynihan**. Mr. Chairman, it is my honor and pleasure to introduce my colleague and friend Mr. Thomas Downey of the Second Congressional District of New York, which is on the eastern end of Long Island. He is here to speak to the bill S. 2131 of which I believe you, sir, and Senators Baucus and Randolph are cosponsors. I will turn it over to Thomas Downey now.

STATEMENT OF HON. THOMAS J. DOWNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Representative **Downey**. Thank you, Senator Moynihan.

Mr. Chairman, Senator Baucus, the residents of my district, which lies in Suffolk County, Long Island, drink water which comes from underground reservoirs, or aquifers. In fact, all of the almost 3 million inhabitants of Long Island rely on aquifers for their water supply. This makes for a potentially critical situation if the aquifers are not adequately protected and become subject to irreversible contamination.

We have long recognized the need to protect our surface waters. Through the Clean Water Act we initiated a major effort to control the discharge of pollutants into surface waters. We also have directed billions of dollars toward the construction of wastewater treatment plants to reduce and practically eliminate the flow of untreated sewage into our surface waters.

Similar congressional recognition of and action on problems with our ground water supplies have been long overdue. This is why I am here today to speak about S. 2131, the "Sole Source Aquifer Protection Act of 1982" introduced by Senator Moynihan and cosponsored by the Chairman and Senator Baucus. S. 2131 is a significant step in the right direction toward insuring adequate protection for our sensitive aquifers. The bill gives formal recognition to the fact that a vital link exists between the use of surface land and the quality of its underlying ground water. This link is especially critical in an area like Long Island where sandy soil cannot adequately filter out some organic compounds from reaching and contaminating ground water supplies.

By setting up a mechanism for designing and implementing a comprehensive ground water protection plan, S. 2131 insures against the risk of ground water contamination due to improper land development. In an area like Long Island, this risk is simply far too great for us to bear without remedy. Contamination would mean either the local ground water would have to be treated or potable water from district sources would have to be transported to the area. These two options are prohibitively expensive. S. 2131, therefore, is a cost-effective and necessary measure for protecting against a possible outcome which would be just too expensive to correct. Senator Moynihan is indeed correct in calling the bill "an insurance policy."

The area on Long Island in greatest need of the special protection provided by S. 2131 is known as the Central Suffolk Pine Barrens. This area overlies the principal recharge zone for the aquifer which provides the drinking water for millions of Long Islanders. The approach embodied in this bill calls for the protection of this recharge zone through comprehensive planning, and this is a very effective and necessary way to control the quality of water that ultimately enters the underground water supply.

S. 2131 establishes a framework for Federal, State and local governments to work together cooperatively to plan and implement comprehensive plans for protection of sole source aquifers. While, naturally, I have been focusing on the situation in Long Island, any region in the United States which is designated by EPA as a sole source aquifer may qualify for the special protection program.

I would like to point out that this bill does not set up any new, complicated regulatory structure, nor does it involve the Federal Government in local land-use decisions. The decision to employ the special protection provisions of the bill is totally at the discretion of State and local governments. Members of the New York State legislature have advised me, by the way, that they are right now preparing legislation that would enable New York to participate in this program for the sake of protecting the Pine Barrens region as soon as the program is passed into Federal law.

In closing, Mr. Chairman, I would like to commend you for your foresight and leadership in trying to provide needed additional protection for sole source aquifers. When the added protection becomes a reality, people not just in Long Island but all over the country will have you and your colleagues on this committee to thank for their safe supply of drinking water.

Let me just add two other thoughts here. The sole source aquifer which lies here is always under the pressure of these hearings to address it. Pressure to redevelop because Long Island has a better community for New York City which has high land valleys, so it is difficult to maintain these.

Second, over the years Long Island has become something of a dumping ground for toxic wastes, and we have in the Third Congressional District, and also in Congressman Carney's, landfills that have been recipient of toxic wastes that have reached into the water supply and contaminated part of the wells of Long Island. Indeed, in Nassau County today, the county joining us to the west, they are hard pressed to find water, and will look further to using the Suffolk County water supply.

So the situation is indeed critical, and I would add also when Congressman Carney, the only registered conservative and myself agree on something that it crosses party lines, and indeed it is done in the national interest.

Thank you very much.

Senator MOYNIHAN. Mr. Chairman, it is my privilege and honor to be able to introduce to you Representative Carney, who is the Representative from the First District of New York, and who has sponsored similar legislation in the House of Representatives.

We will be talking about New York, Long Island. It is the largest aquifer in the country, the most populated on top of that, but this situation is nationwide, the Spokane Valley is designated for aquifer, and to repeat what was said, we are talking about a very small cost that can avoid what would be ecological calamities if we ever spoil these aquifers, they will be spoiled for good, and there is no need to do that.

Now Mr. Carney will speak to that.

Senator GORTON. Thank you, Senator.

Congressman Carney, we are pleased to have you here.

STATEMENT OF HON. WILLIAM CARNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Representative CARNEY. Thank you, Senator. And thank you Senator Moynihan for that introduction.

I am pleased to have the opportunity to come before you today as you begin the process of reauthorizing the Safe Drinking Water Act of 1974. I commend you for the initiative and leadership you have taken in arranging these hearings to address the Act and proposed amendments.

There is one such amendment which I will be speaking in support of today, which is the Sole Source Aquifer Protection Act of 1982, introduced in this body by the senior Senator from New York, Mr. Moynihan. This is a companion piece of legislation of what has been designated H.R. 5562, cosponsored by the dean of our Long Island congressional delegation, Mr. Norman Lent, the subcommittee chairman on Agriculture Research and Energy, and Science and Technology, as well as the chairman, Mr. Fuqua, Mrs. Ferraro from New York; and as Congressman Downey brought out, it has a broad spectrum of support both from a political and philosophical standpoint.

The strength and merit of the Sole Source Aquifer Protection Act of 1982 is that it provides an approach for protecting and enhancing the quality of our vast national resource, our ground water supply.

The legislation is designed to amend the Safe Drinking Water Act of 1974. Through the authority of section 1424(e) of that act, the Environmental Protection Agency has designated 8 sole source aquifers, and an additional 17 are undergoing review.

The designation as "sole source aquifer" means that the ground water resource is the sole or principal source of drinking water for the area, and if contaminated would create a significant hazard to public health. Central to the "Sole Source Aquifer Protection Act of 1982" is a recognition that the national resource requires a joint commitment of Federal, State, and local government resources. But, more important, this proposal also recognizes the prime role our local governmental units must play in carrying out that protection.

I represent one of the eight designated sole source aquifers, that of Nassau-Suffolk Counties, Long Island, New York, and all present available information concludes that the sole source of Long Island's drinking water is in danger of deteriorating into a severely contaminated industrial sewer. Likewise, my colleagues in New Jersey, Florida, and Texas, to mention only a few, are expressing deep concern over the future of their sole sources of potable water.

More than 90 percent of our rural Americans and millions in our urban and suburban areas are dependent on underground water for drinking supplies. The U.S. Environmental Protection Agency has estimated that the amount of our ground water is 50 times that of our annual flow of surface water.

Our ground water is a vast national resource and the need exists to preserve and enhance this resource. Only by protecting the remaining sections of land overlying the deepest and purest portion of the aquifer can the natural cycle of pure rainwater replenishment of the aquifer continue. In this way, heavily populated regions can be assured safe and adequate drinking water.

The Sole Source Aquifer Protection Act of 1982 creates the mechanism for protecting this natural cycle. This bill will allow for the designation of special protection areas defined by hydrogeology, water quality, and land use as of critical importance in maintaining water quality in the designated sole source areas.

Designation of special protection areas would begin at the local government level. At this time I would like to produce a copy of the bill for the record and a section-by-section analysis of it. In addition, to recommend and recognize the commitment of local governments to this particular piece of legislation, I would like to submit for your records copies of two resolutions in suoport of this bill from our local towns, the town of East Hampton and South Hampton.

Senator GORTON. They will all be included in the record.

Representative CARNEY. I believe that no matter how we pay for protecting our ground water, it ultimately is our local governments which must carry out any programs to protect and enhance those resources. But as I have stated, it is a precious national resource which the Federal Government has legitimate interest in helping protect.

Because it allows for cooperative problem solving and because it assigns an appropriate role to each level of government instead of mandating a federally imposed and enforced solution, I believe this bill is in tune with the philosophy of limited, yet responsible government which the people of this country have advocated.

As this committee is addressing the reauthorization of the Safe Drinking Water Act and making its recommendation to the Members of this Chamber, I encourage their support and recognition of this very critically needed mechanism for protection of our Nation's ground water supply.

I will be asking for this same support in the House, as the Committee on Energy and Commerce prepares to reauthorize this Act. Only with the combined support of both the Senate and the House can we indeed protect the future of the very critical and precious resources of our Nation.

Mr. Chairman, I thank you for the opportunity to address the panel today, and I will end by echoing the same remarks that my colleague, Mr. Downey, whose district borders mine, has made, the bill in the House enjoys the type of support that I think is necessary to obtain final passage on political and philosophical standpoints. It allows for the local government to control their destinies, and it singles out a role between all levels of government.

Mr. Downey said the State is anxious to move on it. In my testimony, I have indicated that local governments are responsible for the zoning integrity of the areas in New York State and they are in full support behind the bill and ready to move on it. We recognize the fact we can no longer take the attitude that ground water is out of sight and therefore out of mind. We have to realize what our scientists have proven that they are in bad shape and action must be taken, and I will close by thanking you for allowing me to come over and testify, and to commend Senator Moynihan.

Senator **Gorton**. I have just two questions, and Senator Moynihan is a sponsor of the bill, so he may wish to comment as well.

My first question: Whether or not it is the interest of the sponsors of this bill to create any new powers in the Federal, State, or local governments relating to land use controls or the power of any of those governments to convert private property for public use—

Representative **Carney**. I think the power already exists for that type of activity, and this bill would not infringe upon that existing power, it would not take that away from the local government. They have that power, we are not taking that away.

Senator **Gorton**. Nor are you adding to it in any respect?

Representative **Carney**. Not as I see it given the way the bill was written.

Senator **Moynihan**. I think the chairman for raising the question. The answer is no, we are not adding any regulatory process. We are enabling existing powers to be used, directed to a problem which is not here. All we need is to do what we need and to know how we need to do it, and that is it.

Senator **Gorton**. My next question, and again I want comment from both of you on this: Given the urgent nature of this problem on Long Island, what action do you expect either the State or local governments to take in order to protect this acquifer in the absence of any Federal legislation or Federal assistance.

Congressman **Carney**. You bring up a good question, and all I can tell you now is that on a local level, many of our town governments moved with what we think to be good cause with scientific background. They have moved to enhance their zoning, to upgrade their zoning, knowing if we could protect these critical areas we would insure the recharge through their national God-given program of rainfall and cleansing through the place and then back into the aquifer.

In some cases, however, some of the attempts to do that have been thrown out by the courts because people would bring to the courts' attention that this type of zoning could have been exclusionary. We believe that now since we have identified the fact that sole source aquifers are of critical importance and of a national value that they can go back to that practice, to assist them in going back, produce a plan that would protect it, a plan that would either leave with them the right to have their judgment for land use, not our judgment for land uses, and to get around the problems they have encountered in the past; there is a greater awareness now about the problems associated with sole source aquifers, and this type of will would only enhance that to a greater height. I think we must recognize that there is, and we have in 1974, we have recognized the importance of sole source aquifers by Federal law.

This bill will again allow the local governments to control their destiny, but it will give them certain Federal help in doing so. Technical advice, some financial assistance if necessary, but the control will stay there.

Senator **Moynihan**. I am very much in agreement with Representative Carney, but the point I am sure you recognize, is that this legislation legitimates this issue as an occasion for the exercise of public powers that are already there. It is quite the case that zoning legislation that would exclude buildings altogether from a large area in the case of Long Island or requires acreage can be struck down by the courts is routine for out of concern that matters that have nothing to do with this issue. But where a plan is developed here in having in mind the protection of a sole source, the U.S. Government will have given legitimacy to that act and declare it one in the interest of the people, and it will go forward, and EPA has designated this, the local governments can proceed to protect them in a context of approved national policy.

Senator Gorton. Thank you.

Representative Carney. Mr. Chairman, if I may, I would also like to add that one of the areas that we were most careful about when constructing this bill, was the fact that local governments would have a checkoff on anything that happened, and indeed they do in the way we have constructed the bill. We in no way want to infringe on their rights for the process of eminent domain or zoning.

What we are saying is that if they indeed recognize and are willing to address the problem of sole source aquifers, we will help them. We will not go in with a solution, like 925 did by saying you build a sewer and do it this way, only to find out that maybe that way was not the proper way, but that maybe indeed local governments would have been better.

We want to avoid that, and I think we have avoided that by giving the process of checkoff through the entire system in the planning stage and in the application of what it would ultimately be an approved plan. It has to be approved by the lowest level of government, by your towns, counties, States and the Federal Government would approve their participation financially in the program.

So we have not tried to arrest any of that responsibility away from local governments. As Mr. Downey agrees and pointed out, I believe in local government, I also have a strong desire and concern to protect natural resources such as water and forestry, et cetera, and I think this is a compatible way of doing it; and again, we, my colleague, Mr. Moynihan, and I, agonized in insuring that would happen and were able to come out with a bill to address the question.

Senator Gorton. Senator Baucus.

Senator Baucus. I am still a little unclear here. What additional powers does this bill grant the States that the States do not have already?

Representative Carney. None whatsoever.

Senator Baucus. If that is the case, why cannot States on their own take care of this problem?

Representative Carney. I think we recognize that States do have problems, many States have problems, financial problems, technical problems; and this bill would allow a planning process with the Federal Government involvement to allow for both funding on a 50-50 shared basis, and would allow us to enter with our expertise in part of the planning process, and again if the implementation of a plan is to be accepted, which has to be accepted by all local governments——

Senator BAUCUS. Well, correct me if I am wrong. As I understand it, local communities submit it to the government, if they approve it, they submit it to the EPA and they approve or disapprove.

Representative CARNEY. Right.

Senator BAUCUS. But in that process, EPA has no authority, but it may change things and then a State can agree or disagree, but once EPA agrees, then those local communities can apply to Uncle Sam for matching grants to help the State but still the State implements it.

Senator MOYNIHAN. Exactly.

Senator BAUCUS. So once it is submitted to EPA, then EPA OK's it, then if this bill passes, it can have matching grants.

Senator MONIHAN. Well, the grants are——

Senator BAUCUS. I understand that, Senator. I am trying to find out what powers this bill has.

Senator MOYNIHAN. None. It provides for establishment of a plan that will sustain itself in court. It is a natural purpose.

Senator BAUCUS. That is how I am trying to understand.

Senator MOYNIHAN. The courts have frequently held that zoning measures were exclusionary, as Mr. Carney put it. Now there is a legitimate purpose.

One of the nice things about this subject is that to keep your aquifers clean, all you have to do is to do nothing, just leave them barren.

Senator BAUCUS. Believe me, I understand the problem; we have a lot of aquifers in my part of the country.

Are there any cost estimates on this bill?

Senator MOYNIHAN. Yes; we have a $20 million authorization.

Representative CARNEY. It is a split authorization, there is an authorization for planning and an authorization for implementation, and that is phased in over 4 years.

Senator MOYNIHAN. For fiscal years 1983, 1984, and 1985, $10 million each; and then there will be implementations of $50 million a year starting in 1984.

Senator GORTON. It is $180 million total?

Senator MOYNIHAN. Yes; over a number of years.

Senator BAUCUS. Thank you.

Representative CARNEY. If I might conclude, I will thank you again for allowing me to testify today, and I can simply say we have established a national role in this, and I would go to a television commercial for a filter commercial. "When you are dealing with Allstate, you can pay me now or pay me later." If the aquifers are destroyed, I would hate to think what the involvement of the Federal Government would be from a dollar standpoint to bring clean water from the Adirondacks to 2.7 million people in Suffolk and Nassau Counties, Long Island. It would not be consistent—it would be penny-wise and pound-foolish neglect at this point to permit something like that to occur.

Senator GORTON. Thank you, Mr. Carney.

Senator BAUCUS. I have another question here. I want to ask you if you oppose storage pipeline completion which compete with ground-water aquifers?

Representative CARNEY. I certainly think the issue of coal slurry transportation of that receives a tremendous amount of attention. I can promise you I will employ my efforts into that.

Senator MOYNIHAN. You have just won yourself a vote, Mr. Baucus. There is only so much water in the high plains, that is what railroads are for.

Representative CARNEY. It is amazing how fast you can negotiate this body.

Senator GORTON. Thank you very much.

We will now call back the Water Works Association panel.

Any one of you can answer this question. Your testimony was similar if not identical to that of Mr. Barr's.

My question is whether you agree with Mr. Barr that each of the chemicals for which MCL's have been set would have received the same treatment under the standard in S. 1866 as it has under present law, with the exception of a total trihalomethane. Is that your view of the situation as well as his?

Mr. BURBA. May I respond to that?

I would not like to limit it to MCL's, because our greatest concern with the Environmental Protection Agency is to deal with SOC's and the proposed granular activated carbon. After much controversy they withdrew this requirement, but the thing that triggered it——

Senator GORTON. Is it your feeling they would not have proposed it in the first place under the standard of S. 1866?

Mr. BURBA. That is my impression, because the scientific basis was simply not there. They proposed this GAC to deal with constituents which may or may not be present, which may or may not be identifiable, which may or may not have adverse health effects.

Mr. STACHA. If I could comment on that also, Mr. Chairman, on what has been said, to go back to the original wording, the words "may have any" and I would underscore "may" and "any" implies to the Administrator of EPA almost a directive to engineer some kind of a fail-safe situation; a no-risk situation; and I think that is what the underlying wording in regard to this particular item is. Any time you are directed by a law such as this to engineer a no-risk situation, then they go to avenues beyond where they would normally go, and that is the situation with this particular law as it is now written, because it leaves no room for prudent judgment of professionals.

Do you follow me with that? I think that is again what they are trying to say about the carbons. It was a situation where in order to be fail-safe they felt initially they must propose both a standard and a treatment technique, and the industry was very concerned about how to do something and how you might achieve it.

Senator GORTON. But of course the concept and the question relating to the standard is quite different from that relating to treatment techniques?

Mr. STACHA. True. However, if the word had been such that they did not, more or less, direct a fail-safe no-risk situation, the Administrator must provide for that, or I think we would not have had that situation.

Senator GORTON. Let me go on and ask you a relationship between the standards and the technology.

Mr. STACHA. Certainly.

Senator GORTON. If you were to get only one of those two changes in this reauthorization, either your proposal or something like your proposal for standards, or your proposal of something like your proposal as to how you carry those standards into effect once issued, which would be more important to you, which would be the most significant?

Mr. BURBA. Both. You have to be in a box here. I think the thing that triggers the regulation is highly important, and along with that there should be the benefit cost analysis. Really, I think the triggering mechanism along with benefit cost analysis would be more important than the treatment technique, but I think they are both highly important.

Senator GORTON. Thank you.

Senator Baucus.

Senator BAUCUS. Focusing on the same question, what is the variance among treatment techniques that is available once a standard is set? Is there something where there is an infinite number of treatment techniques or just two or three, if any basic differences of treatment techniques? I know nothing about this subject.

Mr. BURBA. Well, let me address the subject of SOC's. We advocated, and I think it has been proven that plain old air is probably more effective in changing some of our disinfectants than GAC treatment which was very caustic. So there is a gamut of treatment techniques, there are some basics, but it depends upon the particular contaminant or situation.

Senator BAUCUS. Do some contaminants have a wide variety?

Mr. STACHA. It goes back to a more basic situation. When you set a standard and say how to achieve that standard, you end up with a different result than if you were to say here is the standard, go find the technology to develop what is necessary to achieve that and allow the free enterprise system which we so readily enjoy come up with those answers through technology. But where you specify a standard and a technique, we are concerned because you leave no altitude.

I guess one more point I want to be sure we make, I think we are aimed at the right way, and we should be sure that we incorporate into this bill, that we now feel our professional membership has now reached a point with EPA where we are developing a team approach toward the augmenting of various regulations; we are developing a conference here and abilities of each to be able to develop things; and this is where I think we are trying to see the bill to be sure and direct, to keep it in that mind. I think you are doing a good job toward that approach.

Senator BAUCUS. In your association, is there any divergency in opinion among your membership as to this tier approach or size of water companies with respect to what they are required to do or not do? Is that unanimous? Is your association opposed to any size differential?

Mr. STACHA. Our association cuts across every spectrum of life of people involved in the water industry. Some 33,000 members across the country, and there would be some divergence of opinion in almost anything raised; but basically we are in accord with the overall situation.

Senator BAUCUS. There are some members who disagree with that?

Mr. STACHA. Like with anything else, you would probably find some divergence.

Senator BAUCUS. In your view, where is the act too weak, where should it be strengthened?

Mr. BURBA. I think the problems that need to be strengthened to deal with our present and future problems are in the area of monitoring. Going back to 1976 and 1977, EPA described ground waters as being pristine. We found that to be wrong because they had not been monitored. And we think there should be a very strong ongoing national program of monitoring all sources of water.

No. 2, we do not see ongoing strong health programs. And I think this is needed if we are to deal knowledgeably and confidently with water matters. After all, water takes on a little bit of everything that comes in contact with it. We need to do the basic health effect research.

Then because we are dealing with so many water suppliers who are just coming on into these very strict requirements, we need programs for education, for training and developing operators and the people involved in it, so we have a very strong educational program, we need a very strong program through the agencies of field work to help these people do what is required and what is right.

Senator BAUCUS. Thank you very much.

Senator GORTON. Thank you.

Mr. STACHA. I would like to add one thing. As far as the law is concerned, I think flexibility in the law will allow the administration to be able to permeate with reason, that is the most important aspect. I think you are aimed in that direction by removing the wording "may" in effect upon all and changing the wording there. I think that will give flexibility there. I think other emphasis could be placed on research, education and training, and then we will have all the aspects of what is missing there.

Thank you for the opportunity of being here.

Senator GORTON. Thank you.

STATEMENT OF DANIEL W. McNEW, VICE PRESIDENT, WATER QUALITY ASSOCIATION, ACCOMPANIED BY ROBERT H. DOYLE, WASHINGTON LEGAL COUNSEL; AND DR. DUANE D. NOWLIN, CHAIRMAN, SCIENCE ADVISORY COMMITTEE

Senator GORTON. Next we will hear from the Water Quality Association.

Will you please introduce yourselves?

Mr. McNEW. I am Daniel W. McNew, vice president of the Water Quality Association. I am also the president of McNew and Bouchal, Inc., a water treatment equipment dealership located in Annapolis and serving the States of Maryland and Virginia as well as the District of Columbia.

The Water Quality Association appreciates this opportunity to present views on the Safe Drinking Water Act, and on amendments thereto proposed by S. 1866.

Accompanying me are Dr. Duane Nowlin, of Saint Paul, Minn., chairman of the association's science advisory committee and also director of Research and Development for the Lindsay Co.; and also Robert H. Doyle, of Washington, D.C., the association's legal counsel.

Senator GORTON. Mr. McNew, if I might interrupt for a moment. You have a very long statement which we will include in the record, and obviously we will have to have you summarize it.

Mr. MCNEW. I will summarize the 29 pages of testimony and request that the entire statement be included in the record.

Our statement begins by describing the Water Quality Association, headquartered in the Chicago suburb of Lombard, Ill. It consists of members who are engaged in the manufacture and in the wholesale and retail distribution of water treatment equipment which, at the point of use, improves both raw and municipally treated water in the precise quantity and to that particular quality required for any special or general use, whether in homes, in institutions, in commercial establishments, or in all varieties of manufacturing and other industrial occupations.

Through the technologies, products, and processes of point-of-use treatment, water, whether it is needed as working water or as drinking water, or simply as water usually wasted, is treated to the content quality required for the specific use needed, in the amount actually desired, and at the point utilized. This treatment service is provided by this industry anywhere from a single faucet to a small community, and throughout the entire range in between.

The point-of-use water treatment industry consists of more than 200 manufacturers, about 5,000 retailers/distributors/wholesalers, and does nearly $1 billion in annual sales. This industry employs over 50,000 of our fellow American men and women, it serves in excess of 6 million families and more than a quarter million commercial/industrial/institutional customers. It has the potential for materially assisting governments in assuring water's safety through attainment of goals as well as satisfaction of standards.

Through voluntary membership, some 1,400 members of this industry support the Water Quality Association, the objectives of which are: Facilitation of information exchange, educational and community affairs programs' conduct, publication of materials relating to the quality of water, and other functions of a traditional trade association nature which are intended to benefit the public through industry betterment.

The members of the industry, as represented by the WQA constituency, develop, manufacture, sell, and service the entire range of products needed and desired for improving the quality of all grades of water, through point-of-use treatment. For the information of committee members, as well as those other Members of Congress, some of whom may not be familiar with our technology, products, and processes, an industry description is being provided in the next following portion of our statement.

Beginning at page 3, our statement describes the point of use water treatment method and technology. This includes filtration, adsorption, deionization, reverse osmosis, and a variety of processes such as chlorination, ozonation, iodination, bromination, silver bacteriostasis, chemical treatment, electrodialysis, and finally a combination of these methods.

All of these products and processes may be applied at the point of use in a variety of ways. This range of alternatives includes a single faucet, selected waterlines, full household, and countertop batch process.

Likewise, the range of cost varies, and most products are available for outright sale or for rental from one of thousands of water treatment professionals in our industry. Rental prices for individual household treatment methods range from $5 to $15 per month, and individual product prices for outright sale from $10 to $1,600.

Finally, the range of effectiveness, or quality of treated water, also covers a broad spectrum.

For example, each of the five disinfection methods: Chlorination, ultraviolet, ozonation, iodination and bromination, meet the bacteriological requirements of the Federal interim primary drinking water regulations. Filtration at the single faucet may remove dirt particles to a rated micron size of 300 microns to below 1 micron, and full household filtration from 50 microns to 1 micron. Asbestos can be removed to undetectable levels with reverse osmosis or fine filtration. Lead, cadmium, and similar heavy metals are reduced by carbon and removed to extremely low levels by ion exchange softening, reverse osmosis, deionization, distillation, and electrodialysis. There are products now on the market capable of removing trihalomethanes to a level below EPA's proposed maximum contaminant level, and these include properly designed carbon units and reverse osmosis plus carbon units.

The point-of-use water treatment industry is thus capable of, and does fill a need with treatment technologies that exist almost across the whole board, throughout the entire spectrum of possible requirements.

With this array of capability, of economic efficiency, and potential, one might be amazed at how this industry has developed in the years since the Second World War to become a dynamic force in the field of safe water supply.

The basis of that amazement is not the growth of the product development; the basis is in fact the lack of understanding and appreciation by the Government of this industry's capability and potential.

Section 2, subsection (c) of S. 1866 would go a long way to remedy the inability to have drinking water supplies treated in any form other than the central treatment and long lines distribution methods. This provision of S. 1866 would provide future rules to be accompanied by certain determinations and explanations including (A) a statement of the basis and purpose, (B) reasons for any major change, (C) cost-benefit justification, and (D) statement of reasons for rejection of alternatives. We support enactment of this provision.

Stated simply, our thesis in support of this section's enactment is that the point-of-use treatment technology, products, and people can and should be more fully utilized in the achievement of national drinking water goals, in the attainment of drinking water standards, and in the satisfaction of public desires. One good illustration is to be found in the smaller community area.

The point-of-use water treatment industry has developed new technology that can dramatically increase our capability of economically serving the needs of small water systems. Enactment of S. 1866 would provide incentive for greater recognition and more attentive consideration of our industry's potential, all in the public interest.

Most everyone is aware that small water systems have an extremely serious cost problem in meeting the primary drinking water standards. The problem, of course, is the requirement of large capital investment in equipment with high operating costs. In addition, the need for trained operating personnel plagues almost every community.

Meeting today's primary standards with yesterday's technology and concepts of central water treatment is just not cost-effective.

In examining the extent of this problem, it becomes apparent that there are three categories of concern. The first area of concern is community water systems. The surprising thing to many is that the overwhelming majority of community water systems are quite small:

From 25 to 500 people, it is 18,022, or 52 percent of all systems.

Under 2,500 people, it is 27,804, or 80 percent of all systems.

Under 10,000 people, it is 31,946, or 92 percent of all systems.

The second area of concern is the millions of homes on private water supplies. These are truly small water systems, about 10 million residences served by private wells, a segment that is growing by 500,000 private wells a year according to the National Water Well Association. These are permanent homes, second homes, or vacation homes; millions of Americans who cannot be forgotten, although they are not covered by the Safe Drinking Water Act. They are just as concerned, however, if not more so, about the quality of the water that they drink.

The third area of concern is the 250,000 noncommunity water supplies that serve 25 to 30 million Americans.

Senator GORTON. I am really going to have to move you on to the substance of your testimony, sir, because we do have an additional group of witnesses, and we will include your written testimony into the record.

We need to know what your recommendations are.

Mr. MCNEW. Section 2(b) would require the EPA Administrator to consult with and to consider relevant advice of the National Drinking Water Advisory Council. We fully support passage of this position.

Section 7 would reconstitute that council's constituency. We suppot it, with recommendation for revision so as to insure the appointment to the council of a member representative of our industry.

Senator GORTON. You have not had a representative on the drinking water council?

Mr. MCNEW. No, we have not.

Ever since passage of the Safe Drinking Water Act in 1974, the Water Quality Association has been urging the EPA to appoint a member from the point-of-use water treatment industry to serve on the National Drinking Water Advisory Council. Our files indicate that the annual ritual of such appeals began in November 1975, and has continued to date.

For the most part, no reasons were ever supplied in support of the appointment's failure. From time to time, allusion has been made to the fact that this industry is not federally regulated as a possible reason for the failure. But the council's history of constituent members indicates that the representatives engaged in other unregulated pursuits have served. This reason, therefore, cannot be persuasive. More than likely the failure to appoint from our industry could possibly be a lack of understanding for and appreciation of the potential of which our industry is capable for providing a much needed and substantively valuable means of assisting in meeting the national goal of safe drinking water.

Representation of our industry on the council in past years, to cite a single example, might have had a productive impact on the Government's appreciation for the economics of treating water at the point of use as an instance of the alternatives' utilization desirability. In this respect, our industry's philosophy is quite simple.

Out of the present total community water use of 175 gallons per capita per day, less than 2 gallons per capita per day are used for drinking and cooking. The other 173 gallons per capita are used for purposes such as sprinkling lawns, flushing toilets, irrigation, fighting fires, cleaning streets, laundry, bathing, and industrial uses. This means to meet the EPA drinking water regulation 99 percent of water supplied by communities will be purified to a higher quality level than necessary.

Does this always make economic sense? What is going to be the per capita cost——

Senator GORTON. Sir, if I could get you to go to the specific recommendations you made about the legislation, I would appreciate that.

Mr. McNEW. Turning to the public notification of violation. The present act requires that notification to the public must be made anytime there is a failure to meet the SDWA. This requirement imposes an undue and impractical burden on the water utilities as to the public notification procedures when such failures are on an infrequent basis. The type of notice procedure should be varied to eliminate any publication of data that may cause the uninformed public concern in areas where there is no significant health risk.

Regulatory framework/health advisory. Paragraph 1442 of the act should be revised to provide authority for the Administrator to provide upon request technical assistance or advisory opinions to states and public water systems on the health effects of unregulated contaminants. It is important not to establish MCL's on those contaminants which are related to localized situations only.

It is the judgment of the association and its members that the regulatory process should be based on adequate information concerning the need for and the consequences of a proposed action. Attempting to control all drinking water systems regardless of size with a specific treatment method may place an excessive financial burden on relatively small systems. The use of point-of-use equipment may be more cost effective in these instances since one may only treat the water required for a special application. Variations and exemptions are necessary and should be considered on a case-by-case basis.

Competing risks; in the promulgation of rules, the EPA, under section 2(c) of S. 1866 would be required to supply a statement of the rules' basis and purpose. It might be prudent to require, in addition to the explanations' determinations, and reasons therein enumerated, a further requirement on competing risk evaluation. If, in the wisdom of the committee, such further requirement is thought desirable, the requirement could be worded so as to provide the Administrator with discretion in using risk evaluation along with other appropriate analysis.

Benefit-cost analysis: The proposed language of S. 1866 is satisfactory with the following additions:

The analytical method has to be flexible enough to allow the evaluator to possibly vary his recommendations with system size. A relatively small system may be able to use point-of-use equipment to improve the results of the benefit-cost-analysis procedure while other methods may be more appropriate for larger systems.

Operating and maintenance regulations: It is necessary to determine the cost-effectiveness of proper operation and maintenance of a given system as part of the benefit-cost analysis procedure. When such a procedure is followed, two positive results will be obtained: (1) eliminate the requirement of each state or local authority to determine O. & M. procedures which could be costly; and (2) after determining the proper procedure, information may be disseminated for an application and proper training may be provided to the plant operators.

Treatment technology: S. 1866 would eliminate the Administrator's authority to prescribe particular treatment techniques which a water provider must utilize to realize the maximum contaminant levels in the treatment of drinking water. We fully support this provision. These proposed amendments are very worthwhile since they will allow the use of updated or new technology in the treatment of drinking water.

Revised regulation framework: The 1977 National Academy of Science drinking water and health report covered the majority of the concerns one would have in regard to the health effects of various impurities in drinking water. In many instances the report was unable to arrive at a conclusion due to lack of technically complete data and made recommendations in these cases that more research work be performed. It appears that in such cases EPA disregarded this report and proceeded with the process of setting standards as they saw fit. The recommendation of this report should be more closely followed, no more MCL's proposed until data is available to support its recommendation.

Mr. Chairman, we thank you for receiving our testimony and we are willing to answer any questions.

Senator GORTON. Looking on page 24 of your testimony where you deal with the basis for standard setting, could you explain to me relatively briefly how your position differs, if in fact it does differ from the two previous witnesses, in connection with——

Mr. McNEW. It does not differ.

Senator GORTON. You essentially agree on that?

Mr. McNEW. Yes, sir.

Senator **Gorton**. Again I would like to ask you the question which I asked the previous witnesses before, if we were to only change either the basis for standard setting or the method by which those standards were actually met, which of those two would be the more important in your view?

Mr. **McNew**. We feel they are equally important.

Senator **Gorton**. Do you have any difference from the two preceding sets of witnesses as to the impact of that difference basis for setting of standards on what in fact has gone on in the past, the actual process by which EPA has set standards?

Mr. **McNew**. We think S. 1866 is in fact an improvement.

Senator **Gorton**. Would there have been certain procedures which would not have taken place, or different results in certain procedures during the course of the last 3 or 4 years under S. 1866 language?

Mr. **McNew**. I could not answer that, no one knows.

Senator **Gorton**. But you think from a point of view of both clarity and results that S. 1866 is better?

Mr. **McNew**. Yes, it would be an improvement.

Senator **Gorton**. Then we should like to thank you very, very much for appearing here, and your entire written statement will be made a part of the record.

STATEMENT OF WILLIAM F. DEAL, EXECUTIVE VICE PRESIDENT, INTERNATIONAL BOTTLED WATER ASSOCIATION ACCOMPANIED BY TIMOTHY L. HARKER, GENERAL COUNSEL

Senator **Gorton**. The International Bottled Water Association witnesses are next.

Welcome, and will you please identify yourself?

Mr. **Deal**. I have attempted to edit two-thirds of our statement out, and we will appreciate the entire written testimony becoming a part of the record.

Senator **Gorton**. It will, and I thank you for that.

Mr. **Deal**. I am William F. Deal, executive vice president of the International Bottled Water Association. With me today is Timothy Harker, partner in the firm of Peabody, Lambert & Meyers, and general counsel to IBWA.

Bottled water is an important, rapidly growing segment of the drinking water industry. Bottled water is distributed in all States to millions of consumers as their principal source of drinking water. It is estimated that in 1981 over 600 million gallons of domestic bottled water was consumed nationally by 1 out of every 18 American families who use bottled water on a daily basis. In certain areas, one out of every three families uses bottled water in the home daily. Together with the public and private utilities that supply tapwater we constitute the principal source of drinking water that are subject to regulation by the Federal Government.

We are primarily interested in the National Drinking Water Advisory Council and we feel that we should be represented as we are a federally regulated supplier of drinking water. We believe there are important legal and policy grounds for amending the act to require that the National Drinking Water Advisory Council include one member who is expert in the bottled water industry. The bottled water industry is an alternative source technology that is capable of significantly assisting government and small public systems achieve important objectives of the Safe Drinking Water Act. There are two large gaps in the act's requirements regarding the composition of the council; first, there is no requirement for expertise in the technology of alternative sources; and second, there is no requirement for expertise in the logistics of providing safe drinking water on an emergency basis to communities whose public supplies have been contaminated by a hazardous substance.

We know you are familiar with the General Accounting Office's report that a multitude of small systems are now in violation of that act. While these hearings on S. 1866 raise the issue of small system compliance, there is really no provision currently in the bill that would adequately address this very serious public health question.

We propose that Congress remove the current legal impediment to the use of alternative sources such as bottled water as a means of compliance for small systems.

Going to our conclusions now in the interest of time.

Our principal aim in appearing here today is to urge that Congress amend the Safe Drinking Water Act to acknowledge the potentially significant role that the bottled water industry can plan in providing an alternative for millions of consumers increasingly in need of an alternative to centralized treatment for safe, quality drinking water.

First, Congress should introduce greater regulatory flexibility into the act. There is a need for greater awareness of and reliance on alternatives to centralized treatment for accomplishing the goals of the Safe Drinking Water Act. Specifically, small public water systems that are in violation of the act and that can, under certain circumstances, utilize an alternative means of compliance, such as bottled water, should be allowed to do so. If upgrading of central treatment is feasible, systems in violations should in the interim be permitted to undertake alternative measures, including if practical, the use of bottled water to provide quality drinking water to at-risk populations while these systems are moving into compliance.

Second, Congress should require that the National Drinking Water Advisory Council contain a representative with expertise in the alternative source capability of the bottled water industry. Bottled water is one of two federally regulated sources of drinking water. It is the principal regulated alternative to centralized treatment. The total population is now vitally concerned with the availability of alternatives to centralized treatment and when to use them. Representation on the advisory council would assure that the interests of our industry, of the millions of consumers of bottled water and of the general public, increasingly concerned with alternatives to centralized treatment, are accounted for under the Safe Drinking Water Act. Let me emphasize that we are not seeking a member of our association staff or the owner of a bottled water company to be this representative. Rather, the council should include an individual who has expertise in our industry and who is also scientifically and consumer-minded so as to contribute in all areas of discussion by the National Drinking Water Advisory Council.

We thank you for this opportunity to present our views to the subcommittee.

Senator GORTON. Thank you for summarizing so well. But now I would like to ask you for your views on a couple of policies you presented.

I take it, like the immediate predecessor witness, you place a very high value on having your association, the people you represent, part of the advisory community?

Mr. DEAL. At least somebody expertise, not a member.

Senator GORTON. What value do you see to be gained by that?

Mr. DEAL. Well, first of all, since we are written into the act specifically, and regulated, and since in this last week EPA had specific comments made by the importance of alternative sources, we feel somebody with our expertise could add to this very valuable discussion coming out here.

Senator GORTON. Do your views parallel those of all of the previous witnesses on the basic standards?

Mr. DEAL. Yes.

Senator GORTON. And for essentially the same reasons?

Mr. DEAL. Yes.

Senator GORTON. Do your views also parallel those on performance standards versus specified treatment technology?

Mr. DEAL. Yes, sir. The original statement does deal with that.

Senator GORTON. I realize that.

Again, if I could ask you to tell me whether or not during the course of this passage of this legislation through Congress, we come to a point where you can get some of your druthers but not all, which of those two areas would you feel would provide the greatest single improvement in the act in its administration?

Mr. DEAL. Well, we have to say both are very important.

Are you speaking about the advisory council?

Senator GORTON. No, I am speaking about the basic standards in the performance technologies versus treatment.

Mr. DEAL. Yes, we feel the act should be retained in its current form.

Senator GORTON. That was not quite the question.

The question was—perhaps Mr. Harker, if you wish to answer it?

Mr. HARKER. We were confused as to whether you were talking about the two elements we talked about as opposed to——

Senator GORTON. The two umbrella issues.

Mr. HARKER. I think the view that the association has developed with respect to both of those issues is that without some very serious consideration prior to any amendment in the act, the act should be retained in its current form, the reason being that the trigger for initiating a safe drinking water regulation, we feel, should go on the side of safety, which the current one does. Though, as a practical matter making the standard more difficult to incorporate language such as "unreasonable risk" language would not make any changes, speaking personally from my experience with the EPA, I know that when a health hazard is there, if the record can be developed to support regulation of the current standards it would be developed probably to support regulation under the more strengthened one of 1866.

With respect to the specification of treatment technology, we are concerned there in that situation, where the only way to regulate is adopt a treatment technique, because monitoring is too difficult. That if the agency were deprived of the right to impose a treatment technique, that it would not incorporate any regulation.

So therefore, some organic contaminant which was very difficult to monitor for, but which the agency knew a specific treatment technique could control, and that significance we feel the agency should retain the authority to specify the treatment technology, but only in that sense where it was unfeasible to monitor, so an MCL could not be adopted.

Senator GORTON. I thank you. I find that a particularly enlightening answer. Thank you both very much.

STATEMENT OF ED HOPKINS, RESEARCH DIRECTOR, CLEAN WATER ACTION PROJECT, AMERICAN CLEAN WATER ASSOCIATION, ACCOMPANIED BY MILOS KROFTA, KROFTA ENGINEERING CORP.; LAWRENCE KONG PU WANG, LENOX INSTITUTE FOR RESEARCH; AND ARTHUR MacNEILL, EPA DRINKING WATER DEMONSTRATION PROJECT

Senator GORTON. Our final witness is Mr. Hopkins.

There is one more of you than I have on my list, so would you indicate in your introduction——

Mr. HOPKINS. I am Ed Hopkins, representing the clean water action project in the American Clean Water Association. I would like to introduce the people with me here today.

To my immediate right is Dr. Milos Krofta, president of Krofta Engineering Corp. in Lenox, Mass. Dr. Krofta has specialized in innovative water treatment to provide higher quality water at a lower cost.

To his left is Lawrence Kong Pu Wang, research manager of the Lenox Institute for Research in Massachusetts. Dr. Wang has been in the drinking water field for 17 years, both in private industry as a professional, and he is also extremely interested in innovative techniques.

To my right is Arthur MacNeill, an engineer who is involved with a demonstration projected funded by the EPA in Cayuga, N.Y. The purpose of that is to demonstrate drinking water techniques feasible in small communities.

I think the public concern for safe drinking water remains as strong today as it was back in 1974 when this law was first passed.

Lou Harris, the pollster, testified last fall that over 90 percent of the American public is opposed to weakening the Safe Drinking Water Act.

Other people testified here today about the tremendous growth in the bottled water industry, and I think that their testimony shows the American people are willing to pay higher prices for safe water. Prevention certainly is the best and least expensive way to accomplish this. But major laws like the Clean Water Act, Superfund, RCRA, TOSCA, and others which were passed to prevent drinking water contamination have been fully implemented.

The National Organics Monitoring Survey found that hundreds of organic chemicals whose health effects are largely unknown are commonly found in drinking water systems throughout the country. The Environmental Protection Agency continues to rely upon a handful of standards promulgated over two decades ago to protect the public health.

The treatment techniques of the last generation are clearly not adequate to protect the American public against the contaminants found in the water today.

This year Congress will propose changes. These are not fine-tuning changes, but significant changes in a major piece of legislation.

We believe that with cost-effective treatment systems on the horizon, the original goals of the Safe Drinking Water Act can be accomplished. To encourage innovation we favor strict enforcement of the law.

On the other hand, if Congress weakens this law, allows States to drag their feet and injects burdensome cost-benefit analysis in the regulatory process, it will send the wrong signal. That signal is that Congress is going to solve problems through legislative changes rather than by addressing the real drinking water problems communities have.

S. 1866 sends the wrong signals to the private sector. Changing the basis for setting maximum contaminant levels is, in effect, a decision to postpone regulational organic chemicals for decades. It will take that long to get the health effects data on these contaminants. Some would have us believe the current basis for regulating contaminants—may have any adverse health effect—is in essence a crystal ball method.

I feel that is not the case. Costs are taken into account now, and whenever proposed regulations are debated costs are in the forefront of discussion.

Adding new redtape requirements such as cost-benefit analysis will serve to tie up regulation needed to protect public health. It will be costly, wasteful, and unprotective of the public health. Since costs are taken into consideration we feel it is unnecessary.

We oppose extending the length of time States have to implement new regulations. To our knowledge, 18 months is a sufficient period of time. We see no reason for increasing that to 36 or 42 months.

I want to address the problems of small communities in meeting and implementing the standards of the Safe Drinking Water Act. Recent GAO reports highlighted some real problems. Untrained operators, large numbers of violations and little enforcement. Rather than adjusting the law downward to meet the situation, we recommend five concrete steps Congress could take.

First, encourage ground water protection. Most small communities rely on ground water, and the fact that hundreds of wells affecting millions of people have been closed across the country owing to contamination seems to be a signal that Congress and the EPA should seriously consider doing something about ground water. I think the bill Senator Moynihan introduced is a step in the right direction.

Second, promulgate standards. Without standards there is no monitoring and no increase in knowledge.

Third, improve the training of rural treatment plant operators. Private organizations such as the American Waterworks Association have done some work, and this has been helpful, but the problem is greater than they can address on their own.

Fourth, promote research and innovation. As you know, sir, the EPA Office of Drinking Water Research and Development program has been cut about 30 percent. Their program for developing new treatment technologies has been cut by 50 percent. We think the private sector then has the responsibility to innovate and find a less costly treatment technology. But for the private sector to do that there have to be strict standards, enforcement, and some regulatory and statutory certainty to this law.

And lastly, enforce the law, including the public notification provision. The cuts in the State grants program of about 20 percent means there will be less monitoring and less assistance to small communities. Since there is going to be less enforcement, we suggest the public notification provision be retained with correct form to protect consumers to the extent possible, and given them the opportunity to enforce the law. The legislative history of the act shows that public notification was intended to be an enforcement mechanism. It should be retained with the Clean Water Act.

In conclusion, I would like to make an analogy. In 1977, Congress realized that without lower cost wastewater treatment systems we would not be able to meet the cleanup goals we set in this country.

In response to that, Congress amended the sewage treatment grants program to encourage innovative, low-cost waste treatment. They did not weaken the act; they did something positive to address it. That is what I want to see Congress do. Not weaken the Safe Drinking Water Act, but improve the capability of smaller systems to meet these standards by encouraging the development of innovative treatment technologies.

That is all I have to say. Perhaps you would like to hear from these other gentlemen.

STATEMENT OF MILOS KROFTA

Mr. **Krofta**. Senator Gorton, ladies, and gentlemen, we made here a report. I will not read it, I will make just a few comments, the results I would like to recommend.

These refer to the first two water treatment plants between 3,000 to 200,000 population.

I want to put emphasis on the cost factors. If we can reduce the cost, we can improve the water quality.

To obtain that, I believe the present purchasing system should be changed. Presently, it follows the EPA's regulations, and all this results in very high cost. May I say that the cost of water is composed of operational costs and chemical costs plus the cost of the treatment plant and debt service. Construction and debt service is 80 percent or more of the total cost. Therefore, if the cost of treatment plants can be reduced, we can afford far better water.

Now, the other alternative is to have free competition for responsible and good manufacturers or municipalities, as in France. The

EPA was nominated and delegated as the great authority of the water treatment plant. In France, they have no restrictions on water treatment technologies.

EPA's engineering requirements are conservative. May I give you two examples. Massachusetts, in Pitsfield, it is about 50,000 population, and there the consultants have come up with a proposal for $25 million for 25 million gallons a day. We have proposed our system based on a flotation process used in Europe for more than 20 years for $5.2 million. Now, as a result of this, there were a great number of public meetings. Last week there was a meeting of the Water Commission that has decided to apply our system based on the approval of the Environmental Protection Agency.

Now we have this over us and we hope that it will not fall on us.

Now the numbers are really staggering, and the mayor of the city of Pitsfield has hired a consultant to evaluate our proposal and he came up with approval. In this small town of Lenox, we built a water treatment plant for 1 million gallons a day. Comparatively, using conventional technology, this type of installation would cost $1.3 million. The price is $250,000 using our process.

Now these are really important facts, because if the cost is cut down, then all these treatment plants can be operated as utilities. People would pay 1.5 cents per gallon, for 4-people households, 60 gallons per day, or equal to the cost of 12 cigarettes, so there is really no heavy burden on the population; if you treat water in a treatment plant that is excessively costly, and at the same time, if EPA would step back from its design requirements and recommending the type of equipment, and concentrate on enforcement and so on, I think we can really get better and better water.

I thank you.

STATEMENT OF LAWRENCE KONG PU WANG

Mr. **Wang.** Mr. Senator, I would like to testify that the conventional water plant is not feasible for small communities due to the high construction cost and the low income in small communities. The costs will be high when organic substances are to be removed by additional treatment processes. That is true.

I would like to give you an example for small community like Lenox, Massachusetts. This is a small town with a population of 6,500, with design flow of 1 million gallons per day. If this town used a conventional system, the capital costs would be $1.3 million, considering the operations of the costs, grant total would be $245,000 per year.

In this treatment process, matters such as trihalomethanes might be produced, and to remove these using carbon treatment—if that were included—the costs would be increased. If we transfer it to per family, it is simply impossible for them to afford.

Now we have developed a plant based on the new flotation process introduced to this country from Europe, Senator. I would like to call your attention to this flotation system in this country. It is not new at all in Europe. It has been used in many countries in Europe for over 20 years—many full treatment plants ranging from 0.6 to 9 million gallons per day.

I feel engineers in this country are too conservative. Our technologies are not fully utilized.

I have personally supervised much research on this flotation process for water treatment. We have documented results proving that flotation systems can remove bacteria and suspended solids.

In Lenox we will have a plant under construction and in operation sometime next month. Based on our initial estimation, the total construction costs for the plants is only $245,000. This total construction cost is less than one-half the cost of the conventional system.

I also like to emphasize that this flotation plant is so inexpensive, the cost per thousand gallon is only 11 cents.

In regard to this plant, the flotation technology, the basic principle is to separate contaminants by flotation and we can reduce the retention times from 3 or 4 hours requirement down to 3 to 5 minutes. By this reduction in retention time we will be able to reduce the size of this area and of cost, the total construction cost, and this system. Carbon filtration can remove many organic matters such as benzenes and many, many other toxic or organic matters we feel might be toxic.

I also would like to emphasize another fact that even this system itself is so good it can remove many caustic matters, inorganic matters; we can still add on carbon filtration for achieving no-risk situations, even if we add it on and it is a safeguard, the total cost of this flotation plant plus other things can still be cheaper than a conventional system without it.

Mr. Senator, I would like to thank you for receiving my testimony.

Now I want to make a few recommendations. We recommend that the flotation treatment process be listed as one of the techniques available for removal of organic impureties such as trihalomethanes.

We also recommend that the government encourage the development of innovative technologies,. we do not feel there is a need to provide relief for small communities. Small communities as well as large ones should have a chance to enjoy safe drinking water because of these innovative treatment systems.

Thank you very much, Mr. Senator.

Senator GORTON. We should like to thank you.

Mr. MacNeill?

STATEMENT OF ARTHUR MacNEILL

Mr. MACNEILL. My interest here is with small communities. We have worked with the village of Cayuga in upstate New York, and the Finger Lakes areas, and they have, as do a number of communities up there, a large problem with turbidity, particularly in the summertime because of the wave actions that channel into the lakes.

The company that supplied the equipment here originally came in and installed a small scale product study to satisfy EPA's requirement for 1-NTU in turbidity.

Then it became aware of the fact that New York State has a requirement that if you are going to filter water you must in fact produce a 0.2NTU; the intent being if you filter it you should do a good job of it.

The equipment manufacturer then went back and modified their pilot study, redid it, and satisfied New York State.

Then the Environmental Protection Agency agreed to participate in a full scale pilot program, not only to identify its technical capability, but that it is an affordable system to a small community.

We are currently in the construction phase of that right now.

There appears to be willingness on the part of the Water Treatment industry to provide small scale pilot studies for innovative technologies.

I should point out the equipment being used at Cayuga is not currently on New York State Department of Health approved equipment.

There is a recent willingness on the part of some of the regulatory agencies to accept innovative technology.

In Cayuga, they are faced with problems of turbidity which under some conditions is within the 1NTU level in the raw water supply, and within 2 or 3 hours later, depending on wind conditions, they can have turbidity levels of 125 NTU. The old system there cannot react to those changes.

I guess what mainly I want to say is that we would like to say that we want to see the water treatment industry be allowed to be innovative in order to provide systems that small communities can afford to install and operate.

This particular system is costing about $318,000; an approved system, one that is accepted by the Health Department, would have cost about $485,000. So this represents a considerable savings to the community.

That is basically what I have to say.

Senator GORTON. I should like to thank all four of you for your testimony, especially in connection with the need for flexibility and innovation for smaller communities and perhaps others as well.

The only questions I have will be of Mr. Hopkins.

I am sure I heard you correctly, Mr. Hopkins, that you were disagreeing with the preceding witnesses today, both on the basis of standard setting and on the second major issue, the treatment techniques themselves.

Would it be correct to summarize your statement that you do not think there should be any change in the basis for setting standards that the present language of the statute is appropriate and adequate?

Mr. HOPKINS. Yes; I think it balances health risk and costs.

Senator GORTON. Reflecting back to the immediate preceding panel, do you think that there would be a substantial difference in the standards set under the language in S. 1866 from that of the present language?

Mr. HOPKINS. Well, I think unfortunately not because of the slowness of the regulatory agencies in doing anything. But in theory, there is certainly the possibility of regulating more contaminants under the present language than there would be if we went to an unreasonable risk standard.

Senator GORTON. So it is potential rather than actual?

Mr. HOPKINS. The potential is great under the present law, but little has been done. Little could be done under the proposed "unreasonable risk" standard.

Senator GORTON. In connection with the authority of EPA to impose treatment techniques, could you give me a very brief feeling as to your criticisms of the proposal, that once a standard is set the industry itself is allowed to make the determination how it meets those standards, and are your views consistent with the views of the other three people on the panel here with you?

Mr. HOPKINS. Well, I believe that the present law contains a mechanism to encourage innovation when a treatment technique is specified. This is in section 1415(a)(3) of the act. If they can demonstrate there is an alternative technique as effective as the specified technique, they can use it. So I believe that the specification of a treatment technique would indeed encourage innovation to meet that same standard.

In response to the second part of your question, I believe that we are all together in wanting to encourage innovation. We might not be together on the treatment technique provision.

Senator GORTON. And finally, if all the recommendations which you have proposed were adopted in the reorganization of this act, can you estimate what the increase to the Federal costs of regulation would be?

Mr. HOPKINS. Well, that would be hard to do since most of the costs are based on using conventional technologies, and I have not gone through and figured out what it would cost to use that. My feeling is that it would be less——

Senator GORTON. At this point my question goes more to the regulatory cost on EPA, if it were more aggressive in setting new standards, would we have to appropriate significantly more moneys to EPA than we did last year, for example, in order to get the performance level?

Mr. HOPKINS. I think you probably would, yes. The EPA R. & D. program has been cut significantly.

On the other hand, there is a provision in S. 1866 which I think would cost a lot more money, and that is the cost benefit analysis that the law requires. Those are resource intensive and of dubious validity.

Senator GORTON. Now I will go on to the other half of the question.

Is it your answer that with more innovation we would have higher standards imposed throughout the United States without substantial additional cost to the users of water to themselves?

Mr. HOPKINS. There would be additional costs, there is no question about that; but the additional costs using innovative techniques are liable to be much lower than using the conventional treatment technique technologies.

Senator GORTON. Again I should like to thank all of you for being here today and I appreciate your help.

Mr. HOPKINS. Thank you for allowing us to testify.

Senator GORTON. Your full statements will be included in the record.

We will also include in the record a report of the General Accounting Office.

With that the meeting is adjourned.

[Whereupon, at 12:50 p.m. the subcommittee adjourned, subject to recall by the Chair.]

[Statements submitted for the record, a report from the General Accounting Office, and the bills, S. 1866 and S. 2131, follow:]

Statement of the National Association of Water Companies Before the United States Environmental Protection Agency

The Safe Drinking Water Act ("the Act", or "SDWA") has contributed to the provision of quality drinking water to a greater number of people on a more consistent basis than would have been the case without it. The National Association of Water Companies ("NAWC") supported the enactment of the SDWA and still supports its goal "to assure that water supply systems serving the public meet minimum national standards for protecting public health."

Reauthorization of the Safe Drinking Water Act provides the opportunity to correct its defects and improve its application and enforcement. The "issue papers" published by the Office of Drinking Water list various issues and solicit views on them. NAWC hopes discussion of these issue papers will help in developing needed reforms. NAWC believes the issues addressed in pending legislation, namely H.R. 4509 and S. 1866, are of the highest priority. Further, NAWC supports these bills because it believes that they represent effective and reasonable amendments to the Act which will improve regulation of the water supply industry in the interest of the consumers they serve.

This statement will address the issues in the order presented by the Office of Drinking Water.

Public Notification of Violations.

The purpose of the public notification requirement is "to educate the public as to the extent to which public water systems serving them are performing inadequately in light of the objectives and requirements of [the Act]." H.R. Rep. No. 1185, 93rd Cong., 1st Sess., reprinted in 1974 U.S. Code Cong. and Ad. News 6454, 6476. Proper notice should "encourage a willingness to support" efforts to assure safe drinking water. Id. at 6476. "Notice should inform the public, not unduly alarm it." Id. at 6477.

In practice, however, public notification has not worked as intended. In many instances, the notice provisions have been triggered by technical violations of the Act which have not presented any danger to the public. Often notification is received several months after a violation is said to have occurred. Because of this, as in the case of the boy crying "wolf," the public has become conditioned to receiving viol[illegible] notices. NAWC believes this is unfortunate and potentially [illegible]ous. If the public repeatedly receives notices in the absence of any real or apparent danger to health, it may come to regard written notification as just another piece of superfluous paper to be disregarded or discarded. The ramifications of this in the event of a violation that presents an unreasonable risk to public health are obvious. See Attachment A. */

Therefore, NAWC commends EPA for raising the issue of public notification and recommends that the Act's notice provisions be amended to apply only to those cases that present an unreasonable risk to the health of the persons who will consume the water supplied by a system in violation of a requirement of the Act. Also, notice in the supplier's water bills would be dispensed

*/ Attachment A has been retained in the Committee files.

with where media notice had already been given and notice in the water bills would be untimely, hence redundant or confusing.

Since someone must be responsible for determining when notice is required, NAWC recommends the authority for determining the necessity for notification be vested in the states. As is the case so often with the implementation and enforcement of laws designed to protect the public health and welfare, the states are in the best position to act quickly and effectively where a violation has occurred. This recommendation accords with the statutory scheme allowing states to exercise "primacy" in administering the Act.

Attachment B contains legislative language which would implement the recommended changes.

Regulatory Framework/Health Advisories.

The three tiered approach outlined on pages eight and nine of the issue papers beg the question "If a contaminant in drinking water is harmful, is it harmful to all people?" NAWC's answer is an emphatic yes! The THM regulation cited in the issue papers is a good example of a regulatory distinction that is difficult to defend.

The THM regulation assumes that THMs in drinking water in excess of 100 ppb may have an adverse effect on human health. Without now debating whether qualitatively THMs should be regulated or quantitatively whether 100 ppb is the appropriate level of concentration it strikes NAWC as misguided that the regulation only applies to systems serving 10,000 or more persons.

Because the Act applies to water systems with at least 15 service connections or which regularly serve at least 25 individuals, the authority of EPA to effectively preempt these legislatively established numbers with 10,000 persons is of questionable legality. Congress has already decided the size issue as it relates to who shall and who shall not comply with regulations under SDWA. As the Report of the House Committee on Interstate and Foreign Commerce clearly stated:

> It is evident that what is a reasonable cost for a large metropolitan (or regional) public water system may not be reasonable for a small system which serves relatively few users. The Committee believes, however, that the quality of the Nation's drinking water can only be upgraded if the systems which provide water to the public are organized so as to be most cost-effective. In general, this means larger systems are to be encouraged and smaller systems discouraged. For this reason, the Committee intends that the Administrator's determination of what methods are generally available (taking cost into account) is to be based on what may reasonably be afforded by large metropolitan or regional public water systems.
>
> This, of course, means that some small water systems which cannot afford the methods determined by the Administrator to be "generally available" will be unable promptly to comply with all primary regulations. For this reason, authority to grant exemptions from the effective date of the primary regulations and thus to delay the date for compliance by public water systems has been provided in section 1416. However, this period should be used to develop a regional water system which can afford to purchase and use such methods, to seek additional sources of funding such as State aid, or to develop a plan for otherwise serving the affected population after any existing inadequate system is closed. [1974 U.S. Code Cong. & Admin. News 6470, 71 (emphasis added).]

Apart from legalities, how is the public supposed to have faith and confidence in the federal agency charged with administering the Safe Drinking Water Act when that agency says THMs in excess of 100 ppb may have an adverse effect on human health, but you will only receive federal protection if you get your water from a system serving more than 10,000 persons? The harm, if any, posed by 100 ppb THMs in drinking water has absolutely nothing to do *per se* with the size of the water system that supplied the water.

NAWC believes that MCLs should be uniform. The Act adequately addresses unusual situations by providing for variances and exemptions.

The ramifications of EPA's wholesale exclusion of small water suppliers are not inconsequential. First, states and territories with primacy, 49 of them, have exemption authority. EPA effectively abrogated this statutory authority with its blanket exclusion of small water suppliers. Not "some" small water suppliers as Congress indicated might be necessary, but *all* water suppliers serving less than 10,000 persons.

Second, unlike EPA's exclusion, exemptions are not indefinite in their duration. Exemptions are subject to a schedule of compliance which must be met by a certain date. Importantly, *before* a schedule may take effect the state must provide notice and opportunity for public hearing on the schedule.

Third, an exemption may not be granted unless doing so "will not result in an unreasonable risk to health." We believe the Act contains adequate provisions to deal with unusual situations.

NAWC does concur with recommendation number 4 on page 10 of the issue papers that the Act be amended specifically to grant the Administrator authority to provide technical advisories with scientific rationales (*e.g.*, "SNARLs") to states and public water systems on the health effects of unregulated contaminants. Any such statutory authority should clearly state, however, that such technical advisories are not enforceable under the Act; are not admissable in any administrative or judicial proceeding for the purpose of establishing the liability of any water supplier under any other law or statute; and are based on technical information that may not be adequate as a basis for regulations, so that further study may justify or necessitate dropping or amending the technical advisory, proposing an MCL, or taking some other approach. Attachment C contains language which would carry out this recommendation.

Variances and Exemptions.

NAWC rejects the concept of making distinctions based upon the size of a water supplier beyond what the Act already provides. A contaminant is either harmful or not. Thus, we object to EPA continuing its "exploration" into creating a bifurcated variance system based upon water supplier size. The Act contains objective criteria for the determination of variances and exemptions. NAWC believes that such criteria should remain objective, not a discretionary part of EPA's enforcement strategy alluded to on page 12, option 1 of the issue papers. NAWC also opposes different burdens of proof between large and small water suppliers in establishing eligibility for variances. This is suggested in the penultimate sentence of page 11 of the issue papers, and would constitute discrimination that bears no relationship to the Act's goal of protecting public health.

NAWC supports the provisions of H.R. 4509 and S. 1866 which would eliminate the Administrator's authority to issue treatment techniques. Subsections (d) through (j) of section 4 of these bills respecting variances and exemptions are simply conforming amendments. If the Administrator does not have the authority to promulgate treatment technique requirements, it is an obvious corollary that the Administrator does not need authority to grant variances or exemptions from them.

The effect of section 3(f) of both bills would be to leave states with primary enforcement responsibility the task of determining whether some specific technology was "available" to a water supplier seeking a variance from an MCL. This is a case-by-case determination, and we see no reason why states should not be able to do the job well. The states, which have singlehandedly regulated drinking water quality for nearly 100 years, would be unlikely to make judgments that harm their own citizens by granting unwarranted variances from reasonable regulations. Moreover, section 1415(a)(1)(G) of the Act authorizes EPA to revoke any unwarranted variances granted by the states. Finally, existing section 1416 already supplies states with a tool to permit water systems to delay compliance because of economic inability to comply. This "exemption" provision gives states the power to grant an exemption to a financially strapped water system precisely because it cannot afford to comply.

Basis for Standard Setting.

NAWC supports the language of H.R. 4509 and S. 1866 which would change the Act's "may have an adverse effect on health" standard to an "unreasonable risk to health" standard.

Amending the Act to provide for an "unreasonable risk" standard would not reduce the protective nature of the Act. Under H.R. 4509 and S. 1866, appropriate national standards could still be set to protect consumers, even from the mere possibility of a health hazard, so long as the regulatory action was reasonable, e.g., where the possibility was of a large risk and costs of regulation would be small.

The existing "may" standard could be construed to give EPA a virtual blank check to draw on the account of consumers by imposing drinking water regulations that may or may not be reasonable. Any substance "may have an adverse effect on the health of persons," in the sense that scientists could not prove that that substance is completely safe even if they could engage in an infinite amount of testing on humans. The National Academy of Sciences refused to recommend "safe" levels of contaminants to EPA precisely for that reason. Read literally, then, the existing "may" standard could require a level of "protection" which would devour an unreasonable amount of resources.

The proposed amendment, more realistically, calls for regulation only where evidence indicates that a given contaminant poses an unreasonable risk to the health of persons. This standard would pose a balancing test to assure that EPA regulations are reasonable. The notion of an unreasonable risk is a time honored tort standard. Congress has relied on the unreasonable risk standard to protect public health in the Federal Insecticide, Fungicide, and Rodenticide Act; the Consumer Product Safety Act; and the Toxic Substances Control Act. The Occupational Safety and Health Act utilizes a "reasonably necessary or appropriate" standard. In fact, the Safe Drinking Water Act itself invokes the unreasonable risk test for granting variances and exemptions from regulations!

As is the case in general with the proposed legislation, the unreasonable risk standard would be prospective. It would not, therefore, limit or invalidate any existing national primary drinking water regulations.

NAWC concurs with EPA's characterization of the term unreasonable risk, as interpretated by the courts, as requiring a balancing of the burden of the regulations with the probability that harm will occur and its severity if it does occur. As we would interpret the language of the bills, the balancing probably does not need to be quantatitively equal nor would it require absolute proof or quantification beyond what the state of the art would support.

The elimination of terms such as "in the judgment of the Administrator" would avoid any inference that Congress intended to preclude judicial review of such determinations. Also, elimination of language of this type would create a more objective rulemaking standard. Therefore, we support the legislation that would remove this term from the Act.

Competing Risks

NAWC supports the language of H.R. 4509 which would require disclosure of EPA's evaluations of competing risks prior to the promulgation of a national primary drinking water regulation. NAWC interprets this provision to require that EPA conduct risk analyses, and that it publish them and make them part of the rulemaking record. NAWC believes that in most cases these evaluations will be useful tools in analyzing available data, and we note that EPA has said it usually performs risk evaluations.

Although risk assessments have at times been characterized as highly variable and imprecise, they do have value. Variability and imprecision are not caused by risk assessment itself. It is the product of a lack of knowledge or understanding of the matter, for example a contaminant, under study. Risk assessment is simply a means of stating what is known in a useful and public manner.

H.R. 4509 would not prevent EPA from pointing out the range of uncertainty involved in a risk estimate. In fact, it would seem that the extent of uncertainty should be emphasized. Although the bill does not define the term competing risks, this would not appear to be a handicap for EPA since it has stated that it generally does perform them.

H.R. 4509 would not require that proposals be based solely on published risk assessments. In fact, the proposed language specifically requires EPA to publish any other major "policy considerations" underlying its proposals along with the evaluations of competing risks.

NAWC believes that one useful purpose that would be served by declaring that EPA must publish its risk assessments with the proposal of a rule would be to initiate a useful public dialogue over the reasonableness of assumptions that were used, and conclusions that were drawn from them. EPA, or anyone else, should be willing to defend its assumptions in a public rulemaking forum.

Benefit-Cost Analysis

NAWC strongly supports the language of H.R. 4509 and S. 1866. Requiring EPA to determine that the cost of rules be justified by their expected benefits furthers the Act's purpose. Under the existing Safe Drinking Water Act, EPA is directed to protect health "to the extent feasible taking costs into consideration." Surely costs cannot meaningfully be taken into consideration in a vacuum without some consideration of attendant benefits. At the heart of the regulatory reform debate lies the notion that government regulations should be worth their costs, and courts should have statutory guidance with authority to review an agency's decision on this important point.

EPA should have little difficulty with this provision being enacted, because it already performs cost-benefit analysis. Indeed, the determinations of feasibility which are performed pursuant to the Act should be determinations of technological and economic feasibility. A determination of economic feasibility must certainly involve an evaluation and comparison of costs and the benefits to be derived from them. Importantly, H.R. 4509 and S. 1866 would not require EPA to make determinations that are beyond its empirical and analytic capacity. Importantly, this legislation does not require EPA to list all elements of cost and benefit and quantify them with great accuracy, specificity, and certainty, for that would be requiring the impossible. It would require that EPA do the best job it can to establish a reasonable basis for determining that the expected benefits of a regulation justify its costs. Indeed, the provisions of H.R. 4509 and S. 1866 are substantively less rigorous than either E.O. 12291 or S. 1080, a pending regulatory reform bill.

Under the present Act, litigants are free to argue that a rule is not "feasible". Thus, NAWC believes that the proposed legislation represents a reasonable and logical extension of current practice under the Act.

Operation and Maintenance Regulations

NAWC supports the language of H.R. 4509 and S. 1866 which would delete from the Act the Administrator's authority to promulgate a primary drinking water regulation which would contain criteria and procedures relating to operation and maintenance of a water system or requirements as to the siting of new facilities. As will be more fully expressed in our comments with respect to treatment techniques, it is NAWC's position that the Act should be amended so that it is strictly performance oriented. That is, the Act, in appropriate cases, may properly require a performance standard (MCL) but it should not confer in the Administrator the authority to mandate a particular procedure or method of achieving that standard. The elimination of the Administrator's authority to promulgate the standard which would insure "proper operation and maintenance" of a water system strikes the very heart of this philosophy.

Treatment Technology

NAWC strongly supports the elimination of the so-called treatment technique authority from the Act. Elimination of treatment technique authority would not limit EPA's authority to promulgate reasonable performance standards (MCLs).

Performance standards are superior to treatment techniques for three reasons. First, treatment technique requirements generally have the effect of freezing technology, whereas performance standards place a premium on cost cutting innovation. The preceding Administration recognized this when as part of his program of trying to encourage industrial innovation, then President Carter on October 30, 1979, directed EPA to "substitute performance standards for design standards or specification standards within statutory authority".

Second, the imposition of a treatment technique requirement by EPA is paternalistic. It implies that EPA's engineers, remote from each unique site, can more efficiently design treatment systems to achieve public health goals than each system's engineers. In any event, as a practical matter, to ensure that a treatment technique requirement will be effective, elaborate design specifications usually rely heavily on performance standards.

Third, given the developing sophistication in monitoring capability, it is unlikely that EPA would identify contaminants posing appreciable health hazards that could not be monitored.

The Act's variance provisions argue for, not against, the elimination of treatment technique authority. To qualify for a treatment technique variance, a system must prove the equivalency of its technique to EPA, which would sit as a judge with almost unlimited discretion. Presumably, EPA would already be committed to the treatment technique it prescribed or would not have imposed it. Further, the legal and scientific costs of seeking such variance would probably be prohibitive. Proving to EPA's satisfaction that over the life of the plant, an alternative technique would lower levels of these difficult-to-measure contaminants as effectively as EPA's method would be an arduous burden. Moreover, it might be difficult to prove whether the alternative technique itself posed less of a health risk than EPA's technique. Faced with these prospects, a water utility with its limited revenues would almost certainly foresake any alternative effort and comply with EPA's mandate. Setting performance standards and then providing constructive suggestions on how systems might best meet those standards would appear to NAWC to be a much more constructive exercise. Similarly, if performance standards were issued instead of a treatment technique requirement, systems that could obtain a variance for drawing from clean water sources could meet the performance standards at little or no cost. Additionally, these systems will not be forced to absorb the cost of applying for a variance from any treatment technique requirement. The fact that some suppliers might obtain variances from a treatment technique requirement based on the clean nature of the raw water source would be of little solace to others that were required to make a massive investment in technology built to EPA's specifications.

It is unlikely that imposition of a treatment technique would materially reduce required monitoring. Because total exposure over a long period of time is the critical variable for contaminants posing chronic health effects from long-term, low-level exposures, only relatively infrequent monitoring should be necessary. For example, only quarterly monitoring is initially required under EPA's trihalomethane regulations. Presumably, like under the trihalomethane rule, this monitoring could be reduced even further in cases where little contamination is detected in early sampling. On the other hand, even after imposition of treatment technique requirements, extensive monitoring would presumably still be required to assure the equipment is functioning properly.

Administrative Procedures and Judicial Review

NAWC supports the proposed administrative reforms of H.R. 4509 and S. 1866. One of the most important among these, found in both bills, is the provision to amend section 1448(a) which now provides that judicial review of any national primary drinking water regulation may be had only in the United States Court of Appeals for the District of Columbia Circuit. This provision, known as venue, would be changed under the bills to provide that judicial review of a national primary drinking water regulation could be had in a judicial circuit where a substantial impact or injury from the regulation occurs. Centralization of review in the D.C. Circuit deprives the nation of the benefit of diverse views on difficult legal questions, gives enormous power to a single inferior court, inconveniences distant litigants, and exerts intense political pressures on the process of appointing judges.

Another approach, which NAWC would support, is that contained in S. 1080. Under that bill, if petitions for review were filed in more than one circuit within ten days of the first filing, a lottery would be held to determine which judicial circuit would actually handle the case. This approach, like H.R. 4509 and S. 1866, would eliminate the D.C. Circuit's monopoly on judicial review of national primary drinking water regulations. It also has the virtue of being easily applied.

The introduction of limited cross examination, as provided in H.R. 4509, would not, as EPA's issue papers suggest, delay agency rulemaking. It would help elicit valuable information that could expedite EPA's post-hearing consideration of a proposed rule. Furthermore, improved rulemaking procedures would very likely reduce the number of judicial challenges to administrative rules.

This proposal does nothing to make agency proceedings less accessible to non-lawyers. It simply makes hearings more meaningful to anyone, lawyer or not, who can ask questions about "material" issues. The scope of cross examination under H.R.

4509 is carefully limited in several ways. First, cross-examination is expressly limited to "any matter shown to be a disputed issue of material fact." Second, H.R. 4509 would give the Administrator expansive discretion to limit the extent and manner of cross-examination. Third, the Administrator may require classes of parties with similar interests to participate through a single representative and may deny cross-examination of any sort in cases where such a limiting agreement cannot be reached. Finally, the Administrator's determination of what form cross-examination should take would be final unless it was shown to be arbitrary or capricious.

Section 1412(d) already requires the Administrator to consult with the National Drinking Water Advisory Council in proposing and promulgating regulations. S. 1866 would merely require the Administrator to consider the recommendations and views submitted by Council members. This gives the views of Council members a somewhat higher status, but does not, as we interpret the bill, make them binding on EPA or a reviewing court.

As EPA correctly notes, many of the rulemaking provisions of H.R. 4509 have already been enacted in the Clean Air Act. Other examples of Congress creating rulemaking procedures similar to those found in H.R. 4509 may be found. Throughout the 1970's, Congress has repeatedly supplemented the minimal procedural requirements for informal rulemaking found in the Administrative Procedure Act (APA) with procedural requirements like those in H.R. 4509. The Toxic Substances Control Act of 1976 and FTC

Improvement Act of 1974 are examples. Congress has routinely required judicial review of rulemaking by the substantial evidence test. Examples are the Consumer Product Safety Act, the Federal Trade Commission Improvement Act, and the Toxic Substances Control Act.

EPA suggests that some of H.R. 4509's procedural reforms are unnecessary because the courts have already required them under the APA. Many of the procedures that EPA claims to have adopted in response to judicial opinion have, at some time, been imposed on agencies by innovative courts acting without obvious statutory support. The growth of a judicial trend toward requiring "hybrid rulemaking," however, was emphatically reversed by a unanimous Supreme Court in _Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc._, 435 U.S. 519 (1978). The court ruled that:

> Agencies are free to grant additional procedural rights in the exercise of their discretion, but reviewing courts are generally not free to impose them if the agencies have not chosen to grant them. This is not to say necessarily that there are no circumstances which would ever justify a court in overturning agency action because of a failure to employ procedures beyond those required by the statute but such circumstances, if they exist, are extremely rare. _Id_. at 524.

NAWC applauds EPA for voluntarily performing more rigorous administrative procedures than the law requires and urges EPA to continue to perform them. Incorporating these procedures into the Safe Drinking Water Act, however, would assure that EPA would not abandon them. If EPA already follows these procedures and plans to continue that practice, it should have no objection to including them in the Act.

The substantial evidence test is a test of reasonableness which requires that agency determinations be supported by "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." It has been a touch-stone for review of agency findings since 1912 when the Supreme Court stated that courts should "examine the facts to determine whether there is substantial evidence to support the order." The substantial evidence test is still quite deferential to administrative judgment. Under it, the reviewing court may not weigh the evidence, substituting its judgment for that of the agency on the facts; but neither is it to rubber-stamp fact-findings simply because they are supported by a scintilla of the evidence. Substantial evidence means something between the weight of the evidence and a mere scintilla.

The new standard is not so much higher than the old one as it is broader, looking to the whole record. The courts have generally accorded EPA considerable deference in establishing health protective regulations in areas "on the frontiers of scientific knowledge."

The substantial evidence test applies under the Occupational Safety and Health Act, the Consumer Product Safety Act, the Toxic Substances Control Act, and the FTC Improvement Act. An amendment requiring substantial evidence would not violate section 706 of the Administrative Procedures Act, which applies only where other statutes do not provide otherwise.

The present standard of judicial review under the Safe Drinking Water Act is the low "arbitrary and capricious" standard. It is so deferential to agency action that it allows a rule to stand as long as there is "any rational basis for it." This minimal standard is usually employed when the rulemaking process is "informal" (i.e., providing only for notice and an opportunity to submit written comments), because there is no record on which to base more stringent review. In the issue papers, EPA claims that it already carries out procedures which are well beyond this informal process. In sum, H.R. 4509 would enact procedural reforms which are reasonable and which, according to EPA, are already being utilized. The proposed change in standard for judicial review is a corollary matter which conforms to such procedural changes.

PWS State Grant Flexibility.

NAWC supports section 6 of H.R. 4509 because it formalizes the flexibility EPA may sometimes need.

National Drinking Water Advisory Council.

NAWC supports the language of section 7 of S. 1866. This amendment would ensure equal representation on the Council for the water supply industry. In the past water suppliers have often felt they were not adequately represented.

Former Administrators have made appointments to the Council without naming the membership category to which the appointments were being made. S. 1866 would require the Administrator to specify, at the time of appointment, the membership category to which an appointment was being made. This should be made clear for all who have interests in the Council's work.

The NDWAC procedural reforms in H.R. 4509 would give the Administrator the benefit of broader input and diversity of thought from the NDWAC by allowing NDWAC members who disagreed with the NDWAC's recommendation to file their views with the Administrator along with the majority report. This would assure that all viewpoints would be heard; it means equal opportunity for all to be heard, not a disadvantage to anyone. Since the Administrator would only be required to consider the NDWAC's recommendations and dissenting views, it is difficult to see how there would be any disadvantages to this reform that could outweigh its obvious benefits.

Additives.

This section of EPA's issue papers does not outline a problem sufficiently to enable us to respond. In stating the "problem," the issue papers refer to "intentional and inadvertent additives," but in stating the "issue," the issue papers refer to "treatment in drinking water." At the outset, therefore, we cannot identify the additives that may concern EPA. We are, perforce, unaware of any difficulties EPA may feel it has dealing with additives, and we are unable to evaluate whether amendments to SDWA may be needed in this area.

Perhaps in EPA's public meetings on February 4, 5, 8, and 9 these matters will be explained further. Whenever they are, we would be eager to comment further and assist EPA in developing solutions if real problems are found.

Sole Source Aquifer.

NAWC believes it is important to protect groundwater supplies. We recognize, too, that section 1424(e) of SDWA is narrow in its focus. However, this section of the issue papers does not sufficiently outline EPA's concerns, or its thoughts on "significantly chang[ing]" the Act to deal with them, to enable us to comment.

We would note that other statutes give EPA power to deal with pollution that may affect groundwater quality -- e.g., the Clean Water Act, Resource Conservation and Recovery Act, and "Superfund." Statutes of other agencies, dealing with water resources may also be pertinent. State laws on water resources, zoning, land use planning, and other subjects would presumably bear on what EPA or another federal agency may need to do to protect groundwater. Finally, efforts to protect groundwater in case of "any project which . . . may contaminate [a sole source] aquifer through a recharge zone" */ could impact on many industries or interests beyond our own. NAWC believes that these other authorities, and the interests of other parties who probably do not monitor SDWA proceedings as we do, may need to be taken into account before amendments to section 1424(e) could be meaningfully considered. If these matters are to be pursued, we would be glad to comment further and assist EPA in developing solutions if real problems are found.

---

*/ This quote is from section 1424(e) of the Act, which applies only to federally assisted projects. We gather EPA contemplates involvement in other projects, too.

Administrative Orders and Penalties.

An amendment to the Act along the lines suggested in the issue papers could have an adverse impact on the enforcement efforts of those 49 states and territories with primacy. Subsection (e) of section 1414 clearly provides that the Act does not diminish any authority to adopt or enforce any law or regulation respecting drinking water regulations or public water systems so long as such state action does not relieve any person of any requirement otherwise applicable under the Act. Thus, the states, whether or not they have primacy, should be left to decide if administrative compliance orders are prudent enforcement tools for themselves.

NAWC is proud to note that the water supply industry is overwhelming in its support of efforts to assure safe drinking water. We are aware of only a handful of cases where EPA has had to resort to the federal judiciary for enforcement of SDWA or its regulations. Thus, we see no need for administrative enforcement authority along the lines suggested in the issue papers, and we would oppose this, absent a strong showing of need, in preference to enforcement through actions in impartial federal courts.

Revised Regulations Framework.

NAWC supports the language of section 8 of S. 1866. This amendment would eliminate the Administrator's authority to amend interim regulations with another interim regulation. This amendment would not, in any way whatsoever, change the effectiveness or enforceability of currently promulgated national interim primary drinking water regulations. It would apply prospectively from the date of enactment of the amendment.

The Congress that passed the Act intended that "interim regulations be established quickly . . . based largely on a review and updating of the USPHS drinking water standards. Such a review has already be completed. . . ." On the other hand, "revised" regulations under the Act, to be based on NAS recommendations and other careful procedures, were to be used to develop a "comprehensive program of control of drinking water contamination." EPA has never proposed a revised regulation, but has instead, proposed and promulgated amended interim regulations, thereby circumventing the careful procedures Congress laid down for revised regulations. Eliminating the authority to amend interim regulations would simply put EPA back on the track Congress intended it should already be following.

Importantly, existing interim national primary drinking water standards could still be amended, as appropriate, because section 1412(b)(5) would not be changed. This provision clearly states that "[r]egulations under subsection (a) [interim primary standards] shall be superseded by regulations under this subsection [revised primary standards] to the extent provided by the regulation under this subsection." In sum, the regulatory status quo would not be affected, but all future national primary drinking water standards, be they amendments to existing interim standards or new primary standards, would have to be in the form of revised national primary drinking water standards.

EPA asserts in its issue papers that "[b]ecause the NAS issued a report in 1977 that was not in full compliance with the requirements of section 1412(e), **/ it has been unclear when EPA must propose recommended MCLs and revised regulations." This stands in contrast to what EPA said in 1978 in its documentation supporting its amended interim THM regulation. EPA there stated that "although Congress clearly contemplated the comprehensive control of organic contaminants in the Revised Regulations the statute nowhere precludes EPA from establishing requirements as amendments to the Interim regulations even after the issuance of the report of the National Academy of Sciences. . . . The statute does not require that all regulations subsequent to the NAS report be issued as Revised Regulations." ***/ 44 Fed. Reg. 68624,25. This evidences a conscious choice on the part of EPA, not a lack of clarity in the Act.

Contrary to the assertions in this part of EPA's issue papers, there is nothing "unclear" or "confusing" in section 1412(b) of SDWA. This, together with section 1412(e), in fact lays down a carefully detailed and specific procedure for issuing revised regulations. The procedure is rigorous, even demanding, but not unclear or confusing. EPA's difficulties in using this authority stem from something else. For example, in its 1977 report on inorganics, NAS appears to have concluded that the

---

**/ We do not necessarily agree with this as a matter of law. The legislative history cited above is so clear that we harbor serious doubts about the validity of utilizing the interim regulation procedure years after Congress intended its use be discontinued.

***/ Note that EPA could work with "another independent scientific organization if appropriate arrangements cannot be made with NAS. See section 1412(e)(1) of the Act.

state of scientific knowledge simply did not enable NAS to propose recommended MCLs, though Congress had expected NAS to do so (section 1412(e)(2)(D)) and had expected EPA to use these as a starting point for its own recommended MCLs and proposed revised regulations (section 1412(b)(1) and (2)). Congress presumably expected the state of scientific knowledge on potential contaminants would progress more rapidly than it has -- thus the suggested timetables in the Act. There should be no doubt, however, of the wisdom of specifying that futher regulation proceed only on the basis of sound scientific data and peer review. While we recognize the timetables did not work as all had hoped, we still believe the careful procedural requirements are sound. They should be retained. They should be followed. Research should go forward, and indeed is going forward. (See our comment on financial assistance.) Thus, we support this important provision of S. 1866.

Public Water Supply Financial Assistance.

NAWC opposes any distinctions in the Act between publicly-owned water systems and investor-owned systems. An example is section 1442(a)(2)(B) of the Act. NAWC would encourage funding of programs for research aimed at seeking ways to improve water supply technology, but recognizes the realities of tight budgets. In any event, we feel research is the important priority because it will contribute to the sound workings of the statutory scheme for revised regulations and it will in the long run benefit all suppliers and consumers while other programs will benefit only a few.

Attachment B

Subsection (c) of section 1414 of the Act is amended to read as follows:

"(c) Each owner or operator of a public water system shall give notice to the persons served by it where the failure of such public water system to perform any requirement of this act presents an unreasonable risk of harm to such persons.

Each State with primary enforcement responsibility for public water systems, as determined pursuant to section 1413 of this act, shall prescribe the form, manner, frequency, and criteria for giving notice under this subsection. Any person who willfully violates any requirement imposed by or persuant to this subsection shall be fined not more than $5,000."

Attachment C

Section 1442 of the Act is hereby amended by adding the following subsections to the end thereof:

"(g) The Administrator is authorized to provide recommendations to States or public water systems regarding contaminants for which a maximum contaminant level has not been promulgated pursuant to section 1412 of this act.

(h) No part of any recommendation provided by the Administrator under this act, including subsection (g) of this section, relating to any contaminant for which a maximum contaminant level has not been promulgated pursuant to section 1412 of this act shall be admitted as evidence or used in any suit or action in any state or federal court or administrative agency seeking damages, equitable relief, or declaratory judgment arising out of any matter mentioned in such recommendation."

NATIONAL ASSOCIATION OF WATER COMPANIES

Memorandum in support of the Safe Drinking Water Regulatory Reform Act

The National Association of Water Companies is seeking additional Senate co-sponsors to join Senator Gorton and others in introducing amendments to the Safe Drinking Water Act. This proposed legislation was drafted to incorporate most of the provisions of H.R. 4509 (which Rep. Phil Gramm introduced in the 96th and 97th Congresses) plus two other points.

1. In support of the provisions tracking H.R. 4509

Serious flaws in the Safe Drinking Water Act ("the Act") became apparent in the wake of EPA's 1978 proposal of two rules with a combined pricetag of between one and five billion dollars. To make the Act more balanced, Congressman Phil Gramm (D-Texas) has reintroduced H.R. 4509, the Safe Drinking Water Regulatory Reform Act. By changing the rulemaking standard, tightening administrative procedures and judicial review, and rescinding EPA's authority to dictate that systems use a particular treatment technique, H.R. 4509 would direct EPA to regulate more economically and reasonably, leaving more autonomy to state and local regulators.

Under H.R. 4509, the "may" harm health standard which now triggers regulations under the Act would be replaced by an "unreasonable risk" standard, a time honored tort standard which Congress has relied on in the past to protect public health. Also, under this bill, EPA would be required to support any final rule with a determination that the costs of the rule are justified by the benefits (accompanied by an analysis of supporting data) and a statement of why alternatives submitted in comments were rejected "taking into account effectiveness, efficiency, and costs." The forum for review would be "the U.S. circuit court of appeals for a federal judicial district in which a substantial portion of the injury or impact occurs," not always the District of Columbia Court of Appeals.

Finally, H.R. 4509 would eliminate EPA's authority to impose treatment technique requirements like GAC, leaving EPA free, of course, to issue reasonable performance standards. Treatment technique requirements are paternalistic and likely to be inefficient. Imposing a treatment technique requirement implies that EPA's engineers, remote from each unique site, can design better systems to achieve given goals than each system's own engineers. Treatment technique requirements also tend to freeze technological development, while performance standards reward cost-cutting innovation.

This session, as of October 16, there were over 40 cosponsors of H.R. 4509. The National Association of Water Companies, the American Water Works Association, the National Association of Regulatory Utility Commissioners, the National Association of Counties, the National Association of Home Builders, the Independent Petroleum Association of America, the cities of Chicago, New Orleans, Houston, Dallas, and many others are counted as supporters since the last Congress.

2. Two additional points

For the Senate bill, two additional provisions are suggested. The first would eliminate EPA's authority to amend "interim" regulations. The Congress that passed the Act intended that "interim regulations be established quickly . . . based largely on a review and updating of the USPHS drinking water standards. Such a review has already been completed. . . ." On the other hand, "revised" regulations under the Act, to be based on NAS recommendations and other careful procedures, were to be used to develop a "comprehensive program of control of drinking water contamination." EPA has still, seven years after enactment of the Act, never proposed a revised regulation, but has instead, proposed amended interim regulations, thereby circumventing the careful procedures Congress laid down for revised regulations. Eliminating the authority to amend interim regulations would simply put EPA back on the track Congress intended it should already be following.

A second addition to the proposed bill would improve the make-up and procedures of the National Drinking Water Advisory Council. One-fourth of the Council's members would be representatives of water suppliers. Council recommendations to the EPA Administrator would be based on open votes of the Council members, and separate or dissenting statements could be submitted with the majority report.

STATEMENT OF
AMERICAN WATER WORKS ASSOCIATION
BEFORE THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT
MARCH 29, 1982

STATEMENT PRESENTED BY
JOHN H. STACHA
PRESIDENT-ELECT
AMERICAN WATER WORKS ASSOCIATION
AND
FOSTER S. BURBA
CHAIRMAN - WATER UTILITY COUNCIL
AMERICAN WATER WORKS ASSOCIATION

TESTIMONY BEFORE
SENATE SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

Mr. Chairman, the American Water Works Association welcomes the opportunity to appear before you today to express our views on the safe drinking water program. I am John H. Stacha, President-Elect of the Association and Assistant Director, Dallas Water Utilities, Dallas, Texas. With me today are Foster Burba, Chairman of AWWA's Water Utility Council and President, Louisville Water Company, Louisville, Kentucky and James B. Groff, AWWA's Deputy Executive Director for Government Affairs.

AWWA is a 100-year old non-profit scientific and educational society and the largest organization of professional water supply people in the world. Its over 33,000 members include managers, engineers, operators and other employees of community water systems as well as scientists, academicians, state representatives, and others. Our membership includes more than 3,300 water utilities that provide approximately 70% of this nation's potable water and hold, as a common concern, the provision of the best possible water to consumers at a reasonable cost. Since it was founded in 1881, the Association has been dedicated to promoting public health, safety and welfare through improvement in the quality and quantity of water delivered to the public.

History tells us that the industry attempted to update the 1962 Public Health Standards in the late sixties and early seventies. Subsequently, Federal regulation of drinking water was deemed to be urgently required and this Association appeared on several occasions before the Congress during development of the current PL 93-523 and amendments to it. In concert with the aims of the Association, we generally supported this legislation. However, while we believed in the substance of the legislation, there were several specific aspects about which the Association had misgivings.

Our concerns were not without substance. Since passage of the 1974 Act, all of us involved with drinking water have been bogged down in an exercise of identification and overreaction to potential micro-organics, to the point that the basic intent of the law is frequently obscured. The truth of the matter is that in the seven years since enactment of the Safe Drinking Water Act, the basic needs to assure safe drinking water, such as research, education and training, have not been adequately addressed. While science and technology is identifying thousands and thousands of alleged pollutants, the scientific community has little grasp of the impact of these chemicals on human health. Further, concerns for these chemicals has more often than not, resulted in a breakdown of relations, and loss of credibility, among the industry, EPA, states and the public.

We believe that further implementation of the Act should follow a different course than that pursued over the past several years. Government should conduct research, set performance standards and provide incentives for compliance. The industry and its associations should develop the methods of compliance, including the required training and education programs.

Our comments are made with the intent of re-directing the implementation of the law to achieve timely, real and measurable progress towards improving the quality of water for human consumption.

Key to ensuring improvement in public water supplies is accelerated and expanded research by the Federal government to establish sound scientific bases for all health standards promulgated by EPA. By significantly strengthening health related research, the best interests of all will be served, the intent of the Safe Drinking Water Act will be accomplished, limited resources will not be wasted and, most importantly, unproven efforts to remove one constituent will not create some far greater risk to public health.

Concerns for compounds that may be carcinogens should not overshadow threats to health, known to exist today. A strong, effective, coordinated research program will ensure that we act positively, rather than negatively, to unsubstantiated concerns.

As with any major effort, success requires a team approach augmented by trust, openness and confidence. EPA is moving in the right direction by holding pre-regulatory workshops as a part of their regulatory development process. These workshops contribute a wealth of knowledge and can significantly improve the final product.

We suggest the following principles for your consideration.

1. The Act and its implementation must recognize that professionals are involved in the vast majority of community water supplies. They should have the authority and the flexibility to exercise their judgment in establishing treatment techniques, advising the public, managing resources, etc.

2. Maximum Contaiminant Levels (MCLs) which have a sound scientific basis should be uniformly applicable to all of the nation's population. There is no justification for discrimination by establishing different MCLs based upon a system's size, financial resouces, or other criteria. The scientific methodology used to develop standards pursuant to the Safe Drinking Act, and those developed in response to similar laws designed to protect public

health, must be consistent. Further, standards that trigger EPA regulatory action should not be different from those that trigger public notification, granting of variances, etc.

3. EPA must adjust its regulatory role by moving required responsibilities to the states and increasing its guidance functions. Performance standards, not mandatory treatment techniques, should be the goal of the Federal regulatory agency. In addition to research, the Federal government could become more involved in training and education demonstration grants. This will ensure that water quality is improved, starting where it is most likely to have the more significant results.

In my introductory remarks, I described the Associations's members as "professional water supply people." Our 100-year history clearly shows that we are not an organization continually opposing federal bureaucracy or specifically EPA. We share EPA's concern for public health as evidenced by our support for the Safe Drinking Water Act, our assistance in the development of the interim primary drinking water regulations, our encouragement to the State to assume primacy, and our program of nationwide workshops to develop public awareness of the total effort. We sincerely believe, however, that the changes we have recommended in the Safe Drinking Water Act will not result in any less safe drinking water, but rather, with the industry and EPA working together, will result in better, safer water at a price that is consistent with benefits derived.

We appreciate the opportunity to appear today and we will be pleased to answer any questions at the conclusion of Mr. Burba's presentation.

Mr. Burba will now address our position on several specific issues relating to the Safe Drinking Water Act.

I am Foster S. Burba, and as President-Elect Stacha indicated, I will respond to several specific issues concerning the Act.

Many of these issues are adequately addressed by changes to the Safe Drinking Water Act contained in legislation introduced by you, Senator Gorton, and in the House by Congressman Phil Gramm. AWWA commends you and your colleagues for your sagacity in preparing and introducing S.1866. Passage of your bill would solve many of the problems encountered by our members, and others, involved in supply of safe drinking water.

Of greatest concern is the existing legislative language requiring the Administrator of the Environmental Protection Agency to issue regulations for control of substances in drinking water which may have an adverse effect on the public health. In our estimation, this language unduly ties the hands of the Administrator by forcing issuance of regulations to control a substance which have not been scientifically shown to pose an unreasonable risk to health. As currently written, the law allows EPA little choice but to undertake usually lengthy procedures to control a substance, if there is even the slightest chance that it may pose a risk to humans. Such language is costly, both in terms of dollars and in terms of energy required to analyze, design, construct and evaluate methods and systems to deal with regulated substances.

In place of the existing language, AWWA supports the language in S.1866 which requires EPA to regulate only those substances which pose an "unreasonable risk" to public health. Such language does not impose an absolute burden of proof on the agency; it only requires that there be substantial evidence on the record, as a whole, to support their regulations. In addition, the scientific evidence on the record will decrease the chance of litigation resulting from regulation of substances in drinking water which have not been shown to pose a significant health hazard. More importantly, it will speed implementation of regulations protecting and improving water quality.

Although AWWA has worked closely with EPA to implement the Safe Drinking Water Act, we have also had differences with the agency. These differences have centered primarily on requirements, under the act, for the agency to propose treatment technologies as well as maximum contaminant levels. As an association of professional water supply people, AWWA believes that the professionals involved in a water supply system can best determine the most effective treatment methods for a particular contaminant, based on system capability and size, population served, cost, source water quality, and other variables. EPA is the agency best suited to determine MCLs.

Thus, we suggest, as proposed in S.1866, that EPA set only performance standards, rather than also specifying treatment techniques. Such a program permits maximum use of the free enterprise system to develop and implement cost-effective treatment techniques for any substance reasonably determined by EPA to pose a threat to human health. In addition, treatment techniques developed in the marketplace will economically meet regional differences in raw water quality and provide timely response to treatment problems.

Mr. Chairman, while your bill does adequately address the issues I have discussed, there are other areas which our members feel should also be addressed in amending the Safe Drinking Water Act. One of those areas is the question of public notification in the event of a violation of the Act or its attendent regulations. The Act now explicitly delineates the steps which must be taken whenever there is a violation. Among the violations listed in the regulations are failure to submit a report on time and a one-time slight exceedance of a prescribed MCL. These rather minor infractions, which usually have no effect on the public's health, require exactly the same public notification as a serious drinking water contamination problem presenting a significant health hazard.

While we believe in the need for public notification, the frequent notification of minor infractions, normally corrected well before the notice reaches the public, undermines the value of the entire public notification process. People tend to ignore a multiplicity of notices, rather than reading and heeding those notices of significant hazards to health.

We believe it is more effective, and a better use of the public's time and money, to require notification only when the violation presents a significant hazard to the public health -- in other words, when the violation presents an unreasonable health risk to those served. In addition, the state should have the discretion to decide when such public notification is required.

A second area of concern which the Association believes should be clarified in revisions to the Safe Drinking Water Act is the authority and purpose of health advisories issued by EPA for an immediate possible health problem. EPA's suggested no adverse response level (SNARL) advisories, are occasionally treated as extremely conservative MCLs, used to set a limit on the amount of a substance present in a system's water.

AWWA fully supports the concept of a health advisory, providing it is an advisory and not an absolute instruction. Advisories serve a useful purpose in providing guidance to respond to specific, isolated incidents of potentially severe contamination, such as chemicals spills. Their use should be continued.

The evaluation of risks, and benefit-cost analysis, are important elements of sound decision making. Competing risks must also be evaluated. Within the water industry, evaluation of competing risks is designed to insure that processes installed to remove contaminants do not result in creation of other compounds which are greater risks to health.

Inasmuch as AWWA beleives that sound risk assessment is already required by the Act, and sound risk assessment includes competing risks, AWWA feels that competing risks should be further defined in the SDWA. AWWA also supports the language in HR 4509 which states that, if EPA performs such risk assessments, that information should be published prior to promulgation of a drinking water regulation.

AWWA is also concerned about benefit-cost considerations now required in the Safe Drinking Water Act. As professionals dedicated to oroviding the highest quality water possible at a reasonable cost, AWWA members believe that each community must make choices concerning provision of services to the public. The required use of control mechanisms, where benefits have not been related to costs, preempts the right of a community to make those choices. Although a certain mandated requirement might extend the life of one person in every 100 million, or even one person in every million, the community might choose to expend its funds on other life-extending areas, such as fire or rescue equipment, which protect greater numbers of people.

The point is, of course, that imposing too stringent federal controls through regulation prohibits the ability of a community to make those choices. Thus, we suggest that agencies evaluate the benefits associated with risk reduction and the feasibility and cost of controlling various constituents in water. We are not advocating rigorous benefit-cost analysis. Instead, we are proposing, as suggested in S.1866, that costs be reasonably justified by the projected benefits of safe drinking water regulations.

The argument has been made that inclusion of any type of benefit-cost analysis is inappropriate for regulations that must protect the public health to the greatest extent feasible, since such benefits are not quantifiable. Such a legislative requirement, the argument continues, would lead to resource-intensive litigation to determine what are legally acceptable means. While we agree that it is a most difficult task to access the health benefits, if any, in reasonable terms such as dollars, we believe that government must recognize that funds are limited, especially in these days of fiscal restraint. If the benefits of a program fail to justify the costs, those limited dollars will be better spent where they reap greater benefit. Without substantial analysis, the statutory directive to take "costs into consideration" has little meaning, and the obvious intent of the current law is frustrated.

Lastly, the Association supports the language in S.1866 addressing the role, operating rules and membership composition of the National Drinking Water Advisory Council. I have spoken with several AWWA members who have served on the Council. They believe, as does the Association, that legislating these revisions will significantly strengthen the Council and assist it in carrying out its responsibilities regarding provision of safe drinking water for the public.

There are three basic responsibilities regarding drinking water, i.e., (1) determine what is in the water; (2) what are the effects of the constituents found; and (3) what must be done about them. AWWA believes that EPA should mount a strong program of promoting continuous monitoring of surface and ground waters. This will preclude reactions based upon frequently erroneous assumptions by providing a reliable data base to intelligently address future problems and improvements.

Our mutual dedication to the provision of safe drinking water cannot be shunted aside by emotional overreaction to substances of which we know very little. Basic health effects research and monitoring are primary concerns to safe future supplies.

As President-Elect Stacha indicated, we will now be pleased to respond to any questions.

STATEMENT

of the

WATER QUALITY ASSOCIATION

to the

SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

in re

S.1866

TO ASSURE SAFE DRINKING WATER

March 29, 1982

Statement of the Water Quality Association

The Water Quality Association appreciates this opportunity to present views on the Safe Drinking Water Act, and on amendments thereto proposed by S.1866.

My name is Daniel W. McNew. I am the Association's Vice President. I am also the President of McNew & Bouchal, Inc., a water treatment equipment dealership located in Annapolis and serving the states of Maryland and Virginia as well as the District of Columbia.

I am accompanied by: Dr. Duane D. Nowlin, of Saint Paul, Minnesota, Chairman of the Association's Science Advisory Committee, and also Director of Research & Development for The Lindsay Company, Division of The Marmon Group; and Robert H. Doyle, of Washington, D.C., the Association's Legal Counsel.

INTRODUCTION

The Safe Drinking Water Act (Public Law 93-523, as amended) authorization expires in September of this year. Both reauthorization and proposed legislative changes in the substance of the law provide opportunity for review of the statute and of its implementation.

One such bill is S.1866, the Safe Drinking Water Regulatory Reform Act, which is the subject of today's hearing. This measure raises a number of important questions, and we are grateful for the opportunity to participate and to offer our views on these as well as other issues which are of concern in the matter of assuring a safe and plentiful drinking water supply for all Americans.

The Water Quality Association is a nonprofit organization headquartered in the Chicago suburb of Lombard, Illinois at 477 East Butterfield Road. It consists of members who are engaged in the manufacture and in the wholesale and retail distribution of water treatment equipment which, at the point of use, improves both raw and municipally-treated water in the precise quantity and to that particular quality required for any special or general use, whether in homes, in institutions, in commercial establishments, or in all varieties of manufacturing and other industrial occupations.

Through the technologies, products, and processes of point-of-use treatment, water, whether it is needed as working water or as drinking water, or simply as water usually wasted, is treated to the content quality required for the specific use needed, in the amount actually desired, and at the point utilized. This treatment service is provided by this Industry anywhere from a single faucet to a small community, and throughout the entire range in between.

The Point-of-Use Water Treatment Industry consists of more than 200 manufacturers, about 5,000 retailers/distributors/wholesalers, and does nearly $1 billion in annual sales. This Industry employs over 50,000 of our fellow American men and women, it serves in excess of 6 million families and more than ¼ million commercial/industrial/institutional customers. It has the potential for materially assisting governments in assuring water's safety through attainment of goals as well as satisfaction of standards.

Through voluntary membership, some 1,400 members of this Industry support the Water Quality Association, the objectives of which are: facilit[illegible] of information exchange, educational and community affairs programs' condu[illegible]ion of materials relating to the quality of water, and other functions of a traditional trade association nature which are intended to benefit the public through Industry betterment.

The members of the Industry, as represented by the WQA constituency, develop, manufacture, sell, and service the entire range of products needed and desired for improving the quality of all grades of water, through point-of-use treatment. For the information of Committee Members, as well as those other Members of Congress (some of whom may not be familiar with our technology, products, and processes), an Industry description is being provided in the next following portion of our Statement.

INDUSTRY PRODUCTS AND APPLICATIONS

Filtration--to remove turbidity, certain types of color and other particulate matter. Removes dirt particles to a rated micron size. This process is used in homes and the food and beverage industries, and wherever an improved water quality is desired for drinking, cooking, ice-making, and so forth. Special microfiltration devices which can remove bacteria are also available.

Adsorption--the process in which matter adheres to the surface of an adsorbent. An adsorbent is a material, usually solid, capable of holding gases, liquids and/or suspended matter at its surface and in exposed pores. Activated carbon is a common adsorbent used in water treatment which removes chlorine taste, certain organics, and musty and fishy odors. Fluoride removal with activated alumina is a special application of adsorption.

Deionization--to produce water virtually free of minerals to less than 1 mg/l required in high pressure boilers, metal plating, electronics manufacture, jet engine operation, ice-making, and so forth. Deionization (DI) is often used as part of a purification system which prepares water for use in pharmaceuticals, injection into the body, hemodialysis, and wherever water of extremely high quality is difficult or impossible to improve by other processes. This process also removes nitrates and sulfates.

Distillation--the process in which water is converted into its vapor state by heating, and the vapor cooled and condensed to the liquid state and collected. Used to remove solids and other impurities from water.

Reverse Osmosis--used to remove substantially all suspended or dissolved matter from water. A process in which pressure is used to force water through a semipermeable membrane which will transmit the water but reject most other dissolved ions. Reverse osmosis (RO) may be used alone or as part of a system to prepare water of extremely high quality.

Disinfection--there are a variety of methods for disinfecting water at the point-of-use. These include:

> **Chlorination**--a chlorinator or chemical feed pump is a mechanical device specifically designed to feed chlorine gas or solutions of its compounds, such as hypochlorites, into a water supply in proportion to the flow of water.
>
> **Ultraviolet**--a method of water disinfection which employs ultraviolet light to destroy waterborne bacteria. Sometimes

used in conjunction with other disinfection methods to maintain bacterial quality during storage.

Ozonation—ozone (0_3), an unstable form of oxygen and a strong oxidizing agent, is being used as a disinfectant for water.

Iodination—disinfection method recommended for transient populations and for temporary disinfection.

Bromination—a disinfection method where bromine is released from impregnated resin cartridges, now used in marine and offshore applications.

Silver Bacteriostasis—a method which inhibits bacteriological growth through oligodynamic means.

Oxidation—the action of an oxidant for precipitating and removing water impurities such as iron, manganese, hydrogen sulfide and many organics.

Neutralization—the addition of either an acid or a base as required to produce a neutral solution. The use of alkaline or basic granular materials to neutralize the acidity of some water is a common practice at the point-of-use.

Cation Exchange Softening—removes calcium and magnesium, two minerals which seriously impair water's cleaning capabilities and which can deposit a damaging scale in boilers, heaters, plumbing pipes, fixtures, and water-using appliances. Besides its use in homes, where it is essential for bathing, personal grooming, and cleaning, softened water is required by commercial laundries, car washes, restaurants, dairies, beauty salons, and in manufacturing processes such as textile manufacture and those involving steam production. Reduces hardness to less than 17 mg/l and may remove iron, manganese, and other cationic heavy metals depending on their concentration, to levels below proposed Federal Secondary Regulations. Also removes 90-97% cationic radioactivity.

Chemical Treatment—a process often used for controlling corrosion which is the destructive disintegration of a metal by electrochemical means. Usually involves the feeding of polyphosphates and/or silicates with a chemical feed pump.

Electrodialysis—a process in which a direct current is applied to a cell to draw charged ions through ion selective semipermeable membranes, thus removing the ions from the solution.

Combinations of Methods—in many cases, combinations of the basic methods are used to solve water quality problems. For example, chlorination may be used for disinfection and the precipitation of iron or hydrogen sulfide, which then is removed by filtration. Activated carbon is often used in combination with reverse osmosis treatment to remove low molecular weight organic compounds that pass through the RO membranes.

All of the aforementioned products and processes may be applied at the point-of-use in a variety of ways. This range of alternatives includes a single faucet, selected water lines, full household, and countertop batch process.

Likewise, the range of cost varies, and most products are available for outright sale or for rental from one of thousands of water treatment professionals in our Industry. Rental prices for individual household treatment methods range from $5 to $15 per month, and individual product prices for outright sale from $10 to $1,600.

Finally, the range of effectiveness, or quality of treated water, also covers a broad spectrum.

For example, each of the five disinfection methods—chlorination, ultraviolet, ozonation, iodination and bromination—meet the bacteriological requirements of the Federal Interim Primary Drinking Water Regulations. Filtration at the single faucet may remove dirt particles to a rated micron size of 300 microns to below 1 micron, and full household filtration from 50 microns to 1 micron. Asbestos can be removed to undetectable levels with reverse osmosis or fine filtration. Lead, cadmium and similar heavy metals are reduced by carbon and removed to extremely low levels by ion exchange softening, reverse osmosis, deionization, distillation, and electrodialysis. There are products now on the market capable of removing trihalomethanes to a level below EPA's proposed maximum contaminant level—these include properly designed carbon units and reverse osmosis plus carbon units.

The Point-of-Use Water Treatment Industry is thus capable of, and does fill a need with treatment technologies that exist almost across the whole board, throughout the entire spectrum of possible requirements.

This brings our commentary to the first point we would like to address in today's hearing. And this point relates directly to Section 2 of S.1866, Subsection (c) which would require future rules to be accompanied by certain determinations and explanations, including (A) a statement of the basis and purpose, (B) reasons for any major change, (C) cost-benefit justification, and (D) statement of reasons for rejection of alternatives. We support enactment of this provision.

Stated simply, our thesis in support of this Section's enactment is that the point-of-use treatment technology, products, and people can and should be more fully utilized in the achievement of national drinking water goals, in the attainment of drinking water standards, and in the satisfaction of public desires. One good illustration is to be found in the smaller community area.

S.1866, Sec. 2
PROMULGATION OF RULES

POINT-OF-USE POTENTIAL: SMALL COMMUNITIES, PRIVATE WATER SUPPLIES, NON-COMMUNITY WATER SUPPLIES

The Point-of-Use Water Treatment Industry has developed new technology that can dramatically increase our capability of economically serving the needs of small water systems. Enactment of S.1866 would provide incentive for greater recognition and more attentive consideration of our Industry's potential, all in the public interest.

Most everyone is aware that small water systems have an extremely serious cost problem in meeting the primary drinking water standards. The problem, of course, is the requirement of large capital investment in equipment with high operating costs. In addition, the need for trained operating personnel plagues almost every community.

Meeting today's primary standards with yesterday's technology and concepts of central water treatment is just not cost-effective.

In examining the extent of this problem, it becomes apparent that there are three categories of concern. The first area of concern is community water systems. The surprising thing to many is that the overwhelming majority of community water systems are quite small:

25 to 500 people	-	18,022 or 52% of all systems
Under 2,500 people	-	27,804 or 80% of all systems
Under 10,000 people	-	31,946 or 92% of all systems

The second area of concern is the millions of homes on private water supplies. These are truly small water systems—about 10 million residences served by private wells—a segment that is growing by 500,000 private wells a year according to the National Water Well Association. These are permanent homes, second homes, or vacation homes—millions of Americans who cannot be forgotten, although they are not covered by the Safe Drinking Water Act. They are just as concerned however, if not more so, about the quality of the water that they drink.

The third area of concern is the 250,000 non-community water supplies that serve 25 to 30 million Americans. These supplies are, of course, covered by the Primary Drinking Water Act.

Fortunately, our Industry now has the capability, through new water treatment technology and through the standardization of equipment components, to manufacture small packaged systems to correct problems from a specific source of drinking water on a cost-effective basis. And these systems are available today—we don't have to wait until 1985 or 1990.

The biggest problem is the reluctance of the water supply industry and regulatory agencies to accept change. This is why our Industry believes Sec. 2 of S.1866 is necessary.

It has been said in the scientific community, "Don't forget that for any new idea, there are three phases that you have to go through. First, people will abhor the idea; then they will tolerate it; and finally, they will embrace it." Our only objective should be to achieve high quality drinking water at the lowest cost. We should not restrict new technology, but allow the results of research and development of manufacturers, consulting engineers, and governmental agencies to make available new systems without unnecessary restrictions.

These new packaged filtration systems are very dependable and cost-effective. They are ideal for smaller communities, for private water supplies, and for non-community water supplies.

Consideration of the conventional water filtration plant used by large cities reveals that they involve the mixing of chemicals, flocculation basins, sedimentation basins, and huge gravity filtration beds.

By comparison, the new technology results in a small packaged system that is a completely pressurized, closed, filtration system. Water is pumped to a centrifugal separator, a contact clarifier, and a multimedia filter. The resulting water quality is well below 1 NTU which is so important to adequate disinfection. This type of equipment requires little attention by the operator, low capital investment, and low operating costs.

Looking a little more carefully at packaged system components reveals that the centrifugal separator is used instead of settling basins, removing larger particles down to 75 microns with automatic blowdown; then a polymer feed to form a floc to a pressure contact clarifier, where clarification is obtained in five minutes instead of the normal two to four hours; then to a multimedia filter, where filtration occurs completely throughout the bed. All of these are operated under pressure, and this new system reduces waters of 100 to 200 NTU down to below 1 NTU.

Iowa State University filtration tests at the Gilbert, Iowa, treatment plant compared turbidity and iron removal effectiveness of a conventional sand filter versus a new type of multimedia filter. The multimedia filter produced water which was consistently within state requirements. And the service cycle was typically three to four times longer than the single-layer sand filter, even though the multimedia filter was operated at rates up to 7½ gpm per square foot of filtering media.

Another phase of the filtration study was conducted at the Iowa City treatment plant. The conventional treatment plant was compared with a new chemical feed system followed by direct filtration equipment which required only eight minutes of process time. The direct filtration equipment consistently produced water of equal or better quality than the conventional plant, even though it was operated at rates of about 7 gpm per square foot. One set of tests showed that 31 NTU surface water was typically reduced to 0.6 NTU by direct filtration operating at 7½ gpm per square foot.

Cost comparisons are also important. In the publication, "State Of The Art Of Small Water Treatment Systems," published by the EPA in August 1977, and reviewed by Black and Veatch, custom versus prefabricated modular systems were evaluated. The first example was the conventional custom system with a capacity of 300,000 gallons per day which could serve a small community of 2,000 to 3,000 people. A capital investment of $454,500 is required for equipment, not counting the land or building. Using a capital recovery factor of 30 years at 8%, you would have an annual capital cost of $40,370 plus a yearly operating cost of $70,355, or a total of $110,725 per year. If this were a small town of 2,000 people with even 600 connections, this would result in $185 per year per connection for filtration alone, or $1.44 per thousand gallons.

Another example used was a packaged conventional water filtration system using the same processes with a capital investment of $209,000. Although this example also amortized the capital over a 30-year period, we believe it is more realistic to use a 20-year period. This results in an annual capital cost of $21,290 plus $12,900 for operating costs . . . a total of $34,190 per year which is $57 per subscriber, or 45¢ per thousand gallons.

If conventional settling tanks are replaced by centrifugal separators and open clarifiers are replaced by contact clarifiers and the single media filters are replaced by a high rate multimedia filter system, this initial investment can be reduced from $454,500 for the custom engineered plant to $154,000. This is 66% lower. And instead of the $209,000 investment for the prefabricated packaged conventional plant, the cost of only $154,000 is 26% less, allowing a municipality to produce safe drinking water for only $47 per subscriber, or 37¢ per thousand gallons.

In short, new technology in one type of pre-engineered packaged system allows small municipalities to comply with EPA regulations because they can now afford to comply.

There are serious problems in operating water treatment plants. Here again, our Industry has resources and can help. Every small community cannot expect to have a full-time qualified water treatment specialist. One of the subjects discussed at EPA's Small Systems Symposium last November was the circuit rider concept.

What can be done to serve the 30,000 communities that need help? From an Industry viewpoint, there are approximately 3,000 full-time water conditioning and water treatment dealers in America.

These people could be qualified by our Association, the Water Quality Association, with our personnel certification program. As of 1981, almost two-thirds of the WQA membership have successfully participated in the examinations leading to certification under our voluntary certification programs. In 1981 alone, 798 examinations were administered under these programs.

As we see it, the manufacturers in the water treatment field can make a great contribution to resolving this problem but would have to assume some very basic responsibilities. These might include the following:

1. Water Analysis—the capability of complete analysis in accordance with EPA regulations. Atomic adsorption and gas chromatography would be required. Complete and accurate water analyses are the basis for everything else.

2. Facility Survey—a qualified engineer would review existing facilities and their capacity, as well as discuss growth plans of the community which might result in future needs.

3. Application Engineering—this involves equipment recommendations determined by the water analyses and facility survey.

4. Pilot Testing—to verify the performance of a proposed system, it is possible to install prepackaged small pilot test installations. Manufacturers' distributors can set up chemical feeders and small diameter portable exchange filters to forecast results of the full-scale system. Water analyses can then be monitored by the state regulatory agency so that the new technology can be approved without anxiety or apprehension.

5. Installation and Operation—proposal, acceptance, shipment, start-up, and training the operator would be the responsibility of the manufacturer and his designated and licensed water treatment specialist in the area. The mechanical installation of the prepackaged system is then the only responsibility of the small community.

6. Standardization—this is the key. Common components with standard installation, operating and troubleshooting manuals, the availability of local service and parts. These are the plus benefits that a pre-engineered modular design brings. It reduces costs and improves efficiency without the requirement of extraordinary operator training.

7. Regional Engineer—many communities could utilize the services of a regional traveling engineer who would check the performance of the equipment on a form provided by the state and be responsible for the collection of samples and submission to qualified laboratories.

This new direct filtration system is a major technological breakthrough in process equipment and concept. It is the only economic solution for the smaller water system, and it works.

The next area of concern is the removal of the ten inorganic and six organic compounds listed in the Primary Drinking Water Standards. This could be accomplished either by central treatment or by point-of-use removal at the consumer's residence or place of business.

It is interesting to note that four of the ten inorganic contaminants can be removed by an ordinary ion exchange water softener. These are: barium, cadmium, lead, and silver. All ten of them can be removed by deionization or substantially by reverse osmosis.

If we were to select one universal point-of-use concept to augment small community water treatment, it would be the use of a third water faucet to provide quality drinking water. While packaged central water treatment can remove turbidity and disinfect the water so as to assure the removal of acute toxicants, point-of-use under-the-sink units can remove the chronic toxicants. Under-the-sink water treatment supplying a third faucet for drinking and cooking water probably would consist of one or more of the following units: a filter for particulate matter removal, a water softener, a reverse osmosis module for the reduction of one or more of the ten inorganic contaminants and removal of the high molecular weight organics, as well as the reduction in total dissolved solids and ultrafiltration. Another component, activated charcoal, can be used to remove trace organics such as pesticides, chloroform and other trihalomethanes, in addition to greatly improving the taste of the water. Incidentally, this system can also be designed to remove asbestos particles.

Another important area is degradation of water quality in the distribution system--the trip between the water treatment plant and the consumer's glass. In older communities with distribution systems of lead piping, in areas with acidic water, there has been a problem of lead pickup. In homes that use copper plumbing there is a potential problem of the pickup of cadmium and lead from the solder. This leads us to the conclusion that in the final analysis, high quality water for drinking should really be produced just before a glass of water is drawn.

The concept of employing point-of-use water treatment as an augmentive or supplemental treatment to central water treatment can be cost-effective and performance-effective in many situations.

A technically feasible alternative might be point-of-use drinking water systems--owned, installed, and maintained by the water utility. To handle future needs, additional systems could be added on a unit-by-unit basis.

As can be seen from this discussion, it is possible to design packaged central treatment plants for barium, arsenic, high TDS, or any other contaminant. Whether a packaged central system or a point-of-use equipment system would be most cost-effective can be easily calculated.

Many in the EPA have heard of this concept before, as have some Members of Congress. Our major concern is the acceptance of new technology for solving water quality problems in small communities, non-community supplies, and private water supplies. Enactment of S.1866 could assist in the attainment of this public interest objective. Sec. 2(b) would require the EPA Administrator to consult with and to consider relevant advice of the National Drinking Water Advisory Council; and Sec. 7 would reconstitute that Council's constituency. We fully support enactment of Sec. 2(b), and we support Sec. 7 with recommendation for revision so as to insure the appointment to the Council of a member representative of our Industry.

S.1866, Sec. 2(b) and Sec. 7

NATIONAL DRINKING WATER ADVISORY COUNCIL

Ever since passage of the Safe Drinking Water Act in 1974, the Water Quality Association has been urging the EPA to appoint a member from the Point-of-Use Water Treatment Industry to serve on the National Drinking Water Advisory Council. Our files indicate that the annual ritual of such appeals began in November of 1975, and has continued to date.

For the most part, no reasons were ever supplied in support of the appointment's failure. From time to time, allusion has been made to the fact that this Industry is not federally regulated as a possible reason for the failure. But the Council's history of constituent members indicates that representatives engaged in other unregulated pursuits have served. This reason, therefore, cannot be persuasive. More than likely the failure to appoint from our Industry could possibly be a lack of understanding for and appreciation of the potential of which our Industry is capable for providing a much needed and substantively valuable means of assisting in meeting the National goal of safe drinking water.

While Section 1446 of the present Act would appear to be sufficient to empower the EPA Administrator to make appointment to the Council from among the expert ranks of our Industry (and this authority has never been questioned), nevertheless the persistent failure to respond affirmatively to recommendations over the years compels us to now seriously support amendatory legislation with the proviso that positive direction be given the Administrator, either in the form of specific legislative language or expression of legislative intent. The appointment of a Council member from our Industry could qualify under one of several categories specified either in current law or the S.1866 revisions: general public, experts in health and hygiene, or private water suppliers. But, the EPA Administrator must be made aware of the need for such action, and our Association staff in Lombard, or our Counsel in Washington, Robert H. Doyle, 1130 Seventeenth Street, N.W., Suite 230, Washington, D.C. 20036, telephone (202) 331-0420, will readily assist Committee Staff in the preparation of appropriate provision to accomplish this result. Both the Council and the Administrator will benefit substantially from the information and assistance that will thus become available through such appointment.

Representation of our Industry on the Council in past years, to cite a single example, might have had a productive impact on the Government's appreciation for the economics of treating water at the point of use as an instance of the alternatives' utilization desirability. In this respect, our Industry's philosophy is quite simple.

ECONOMICS OF POINT-OF-USE TREATMENT

Out of the present total community water use of 175 gallons per capita per day, less than two gallons per capita per day is used for drinking and cooking. The other 173 gallons per capita are used for purposes such as sprinkling lawns, flushing toilets, irrigation, fighting fires, cleaning streets, laundry, bathing, and industrial uses. This means that to meet the EPA drinking water regulations, 99% of water supplied by communities will be purified to a higher quality level than necessary.

Does this always make economic sense? What is going to be the per capita cost of improvements needed in small communities to comply with Federal regulations? Might not an alternative be more economical than a central system? At the community level, for example, one Ohio town, West Liberty, with 645 connections actually considered free distribution of point-of-use units to each household rather than make $923,000 worth of improvements to its central treatment plant. This is an indication that point-of-use treatment technology is a viable alternative to central treatment plants.

If consumers in Boston want lead removed from their water, it can be done now.

If consumers in Nevada want arsenic removed from their water, it can be done now.

If consumers in Illinois, Iowa, or Pennsylvania want radioactivity removed from their water, it can be done now.

With these point-of-use capabilities, why aren't they more widely used? Why aren't we moving ahead? What is stopping us from our efforts in supplying better water to consumers? The answer is found in certain barriers—barriers arising out of lack of Federal recognition that point-of-use water treatment is a viable, workable, existing and often a less costly alternative. This in turn creates another barrier—a barrier to investment.

In the present situation, even if an industrial company goes ahead, does the research, does the design work, and builds the equipment, it has no assurance that the Government rules are not going to change and put it out of business. Until the situation is clarified, the private sector, depending as it must on investor input, cannot do the job of which it is capable. As a result, public attention and public policy are focused entirely--and in many cases to the consumer's disadvantage--on central water treatment as the only way to go.

We need consumer input to balance professional judgment. If we listen only to professionals, we might think that community water systems are the only choice. Point-of-use water treatment is a publicly accepted alternative to central treatment. More research is needed. But our Industry cannot do it alone. We need the assistance of academic and Federal research. We pledge to make every contribution we can to this coordinated effort, and we ask that we be permitted to participate. The point-of-use alternative needs to be more fully explored, recognized, considered, and acknowledged. This is explicit in Executive Order 12291 of February, 1981, explicit in Sec. 2(c) of S.1866, and eminently desirable as an addition to the Council membership.

We have described the present state of the art in this Industry--without bond issues, without huge construction projects, without delay, without obsolescene--available to consumers today. Point-of-use treatment has the potential for providing or treating water to meet all requirements of both the interim Primary and proposed Secondary Drinking Water Regulations. This alternative can provide water for private systems, small community supplies, non-community supplies and for those persons needing special water--water for illness or during different periods of life, such as nitrate-free water in infancy. Most important, only that water which needs to be of drinking water quality is treated to that quality.

As previously indicated, many consumers have three qualities of water today. Central treatment and the Point-of-Use Water Treatment Industry are presently working together to provide the best quality water for their specific uses. Consumers, thus, have a disinfected "utility grade" water which they use for fire fighting, sprinkling, and other uses where optimum drinking water quality is not essential. They also have a "working grade" water which is softened in the home and used for laundry and bathing. And, finally, they have an "optimum grade" water highly purified at the point-of-use to supply that 1% used for drinking and cooking.

S.1866, Sec. 3 and Sec. 4

The Water Quality Association thus urges avoidance of single-method, single-minded regulation in the goal attainment mechanism. In this respect, we would support provisions of amendatory legislation which would condition future regulation on the use of flexibility, cost-benefit justification, and reasonableness.

Our Association and its members are of the judgment that the regulatory process should be based on at least the following general principles: Decisions must be based on adequate information concerning the need for and consequences of proposed action. Action should be undertaken only when there has been a convincing demonstration that potential benefits to society outweigh potential costs. Net benefits to society should be maximized. The existence and utility of all available alternative approaches to any given regulatory objective should be fully explored, and the one producing the least net cost to society adopted. Regulatory priorities should be determined in such manner as to maximize the aggregate net benefits, taking into account industrial, economic, and all other conditions which are significant to the promotion of the general welfare and attainment of every broad national objective.

We are confident that the employment of such principles, substantively based on the President's Executive Order 12291 of February 17, 1981, will be productive of point-of-use water treatment technology as an acceptable and, in many cases, preferable alternative method of providing safe drinking water.

During the course of a public hearing last month, held in Washington by EPA on proposed amendments to the Safe Drinking Water Act, the Water Quality Association testified respecting issues raised by S.1866. We recommend the following, most of which comments pertain to recommendations contained in S.1866.

Public Notification of Violation: The present Act requires that notification to the public must be made anytime there is a failure to meet the SDWA. This requirement imposes an undue and impractical burden on the water utilities as to the public notification procedures when such failures are on an infrequent basis. The type of notice procedure should be varied to eliminate any publication of data that may cause the uninformed public concern in areas where there is no significant health risk. Any failure to meet the SDWA should be thoroughly investigated by the utilities to determine the cause of such failures.

Regulatory Framework/Health Advisory: Paragraph 1442 of the Act should be revised to provide authority for the Administrator to provide upon request technical assistance or advisory opinions to states and public water systems on the health effects of unregulated contaminants. It is important not to establish MCLs on those contaminants which are related to localized situations only.

Variances and Exemptions: It is the judgment of the Association and its members that the regulatory process should be based on adequate information concerning the need for and the consequences of a proposed action. Attempting to control all drinking water systems regardless of size with a specific treatment method may place an excessive financial burden on relatively small systems. The use of point-of-use equipment may be more cost-effective in these instances since one may only treat the water required for a special application. Variations and exemptions are necessary and should be considered on case-by-case basis.

Basis for Standard Setting: We would recommend the adoption of the language of S.1866 with the addition of the following sentence.

> "There is to be no regulation of a contaminant's MCL if there is no known health effect."

The addition of this language, in our judgment, would help control the possible misinterpretation of what is "an unreasonable risk."

Competing Risks: In the promulgation of rules, the EPA, under Sec. 2(c) of S.1866 would be required to supply a statement of the rules' basis and purpose. It might be prudent to require, in addition to the explanations' determinations, and reasons therein enumerated, a further requirement on competing risk evaluation. If, in the wisdom of the Committee, such further requirement is thought desirable, the requirement could be worded so as to provide the Administrator with discretion in using risk evaluation along with other appropriate analyses.

Benefit-Cost Analysis: The proposed language of S.1866 is satisfactory with the following addition:

> The analytical method has to be flexible enough to allow the evaluator to possibly vary his recommendations with system size. A relatively small system may be able to use point-of-use equipment to improve the results of the benefit-cost analysis procedure while other methods may be more appropriate for larger systems.

Operating and Maintenance Regulations: It is necessary to determine the cost-effectiveness of proper operation and maintenance of a given system as part of the "Benefit-Cost Analysis" procedure. When such a procedure is followed, two positive results will be obtained: 1) eliminate the requirement of each state or local authority to determine O & M procedures which could be costly; and 2) after determining the proper procedure, information may be disseminated for an application and proper training may be provided to the plant operators.

Treatment Technology: S.1866 would eliminate the Administrator's authority to prescribe particular treatment techniques which a water provider must utilize to realize the maximum contaminant levels in the treatment of drinking water. We fully support this provision. These proposed amendments are very worthwhile since they will allow the use of updated or new technology in the treatment of drinking water.

Revised Regulations Framework: The 1977 National Academy of Science (NAS) "Drinking Water and Health" Report covered the majority of the concerns one would have in regard to the health effects of various impurities in drinking water. In many instances the "Report" was unable to arrive at a conclusion due to lack of technically complete data and made recommendations in these cases that more research work be performed. We feel that the recommendation of NAS should be closely followed and no MCLs should be recommended until sufficient technical data is available to support the recommendation.

EPA and the Point-of-Use Water Treatment Industry can and should work more closely together in the public interest. There do exist a variety of ways this can be done. We have indicated a few in our discussions with the Agency, and, for the information of this Committee, there follows a recitation of our suggestions for ways in which we can mutually improve the public welfare in the matter of providing safe drinking water for all Americans. Hopefully, with the appointment to the Advisory Council of a member from our Industry, additional and timely assistance can be provided.

There are a multitude of ways in which Government and the Point-of-Use Water Treatment Industry can work together.

For our part, we:

Can provide immediate assistance for the solution of presently existing and future problems involving governments in meeting their responsibilities for providing safe drinking water.

Can develop product standards as we have done for water softeners and are presently doing for drinking water units.

Can train, educate, and certify the professional knowledge level of individuals in the Point-of-Use Water Treatment Industry.

Can conduct more research to develop new technology and to discover new applications for existing treatment methods.

Can serve as a substantial resource for information, for assistance, and for product development ideas.

And, we can help in the development of national policy.

As for the Regulatory Agency, Government:

Can promote centralization of our drinking water programs in one place--centralize in one agency the planning, research and regulations, thereby eliminating the legislative uncertainty and the regulatory confusion together with the high costs associated with the multi-agency approach.

Can sponsor more research on the efficacy of point-of-use water treatment products, and conduct demonstration projects of packaged modular systems in small communities.

Can provide financial aid to the Water Quality Association's research, training, and standards programs.

Can give our Industry an opportunity to aid in the development of policy and programs by providing a place on the National Drinking Water Advisory Council for our representative.

And, Government can provide substantive recognition of the fact that there does exist more than traditional methods of treating water for utility purposes, for domestic purposes, and for human consumption.

The goal of S.1866 is to assure a safe and adequate supply of drinking water for all Americans. It is an objective of primary importance, equal in priority to many of the other national concerns which have consumed our recent attentions.

This Committee is certainly to be commended for its efforts to improve this basic legislation, and our Association offers to provide Committee Members and Staff with whatever additional information or assistance might serve to promote the interests of the public.

We thank the Committee for the opportunity to participate in this set of hearings.

Testimony on Behalf of the International Bottled Water Association Before the Toxic Substances and Environment Oversight Subcommittee of the Environment and Public Works Committee of the U.S. Senate Regarding the Safe Drinking Water Act Amendments

March 29, 1982

I am William F. Deal, Executive Vice President of the International Bottled Water Association ("IBWA"). With me today is Mr. Timothy L. Harker, partner in the Firm of Peabody, Lambert & Meyers, and General Counsel to IBWA. IBWA represents the U.S. bottled water industry. Bottled water is an important, rapidly growing segment of the drinking water industry. Bottled water is distributed in all states to millions of consumers as their principal source of drinking water. It is estimated that in 1981 over 600 million gallons of domestic bottled water was consumed nationally by 1 out of every 18 American families who use bottled water on a daily basis. In certain areas 1 out of every 3 families uses bottled water in the home daily. Together with the public and private utilities that supply tap water we constitute the principal sources of drinking water that are subject to regulation by the Federal Government. Mr. Chairman, we applaud your initiation of a constructive, broad ranging public discussion as to what amendments may be appropriate for the Safe Drinking Water Act ("Act") during this year of its reauthorization. Your willingness to listen closely to public opinion prior to formulating a position on amendments to the Safe Drinking Water Act is commendable.

The bottled water industry is particularly interested in assuring that there is no weakening of EPA's statutory authority over safe drinking water. At a time when concerns about environmental contamination of public water supplies are greater than ever, the Congress and EPA should not dilute the strength of the Safe Drinking Water Act.

There are, however, aspects of the Safe Drinking Water Act where legislative refinement may serve the interest of public health. Certain of these are discussed in IBWA's separate more detailed written statement for the record. But allow me to focus in my testimony on two especially important measures.

The National Drinking Water Advisory Council Should Represent Federally-Regulated Suppliers of Drinking Water

First, IBWA believes that there are important legal and policy grounds for amending the Act to require that the National Drinking Water Advisory Council include one member who is expert in the bottled water industry. The bottled water industry is an alternative source technology that is capable of significantly assisting government and small public systems achieve important objectives of the Safe Drinking Water Act. There are two large gaps in the Act's requirements regarding the composition of the Council, i.e., 1) there is no requirement for expertise in the technology of alternative sources, and 2) there is no requirement for expertise in the logistics of providing safe drinking water on an emergency basis to communities whose public supplies have been contaminated by a hazardous substance.

The bottled water industry offers this expertise to the Council and to EPA. The principal alternative to centralized treatment is bottled water. Our industry, accordingly, can assist in resolving the problem of non-compliance by small public drinking water systems. The principal source of emergency supplies of drinking water is bottled water. Our industry, accordingly, can assist EPA, the states and local governments in meeting the threat to health posed by hazardous substance contamination of public drinking water systems.

For these two overriding reasons, Mr. Chairman, we urge Congress to require that the Council possess expertise in the alternative sources technology of the bottled water industry. In our written submission (Attachment I) we have spelled-out other legal and policy reasons for enacting such a requirement. In the interest of time I will not discuss them in detail here. Suffice it to say that the public drinking water utilities (both government and privately-owned) and the bottled water industry are the only sources of drinking water subject to comprehensive federal regulation. There is a significant scientific, technical and legal relationship between the regulation of these two sources of drinking water. It seems inappropriate for the Advisory Council routinely to include representatives of one federally-regulated source but not the other.

Either as a matter of law or as a practical matter, major decisions made by EPA under the Act significantly affect the bottled water industry. The regulatory decisions of EPA directly influence FDA's regulation of bottled water. They have an impact on the millions of people who consume bottled water, as well as on the total population that is concerned with knowing of the availability of alternatives to centralized treatment and when to use them.

The proper administration of the Federal drinking water program, thus, requires the inclusion on the National Drinking Water Advisory Council of expertise in the capability and technology of the bottled water industry. The Council should have the expertise of this industry in serving alternatively to centralized treatment as a means of system compliance and in providing emergency sources of drinking water. The Council should not continue to advise the Administrator as if EPA's decisions had no impact other than on those who regulate, supply and drink tap water. EPA and the states should not continue to wrestle with the problem of widespread non-compliance by small public systems without first relying more on alternative technologies such as the bottled water industry as a partial solution.

Small and Rural Water System Compliance

The General Accounting Office reports that a multitude of small systems are now in violation of that Act. While these hearings on S. 1866 raise the issue of small system compliance, there is really no provision currently in the bill that would adequately address this very serious public health question.

In seeking to apply the requirements of the Act to these small systems, EPA and the states should be looking for opportunities to rely on alternatives to centralized treatment for these systems to come into compliance. There are numerous situations where bottled water can serve temporarily or permanently as an alternative source of safe drinking water for small community water systems that are not in compliance with the Act. Yet, the Act currently does not provide authority for the use of such alternative sources.

Thus, IBWA proposes that Congress remove the current legal impediment to the use of alternative sources such as bottled water as a means of compliance for small systems. Providing the option of relying on an alternative to centralized treatment would afford EPA and the states an additional tool for use in meeting the public health criteria of the Act. It would afford consumers of small public systems in violation of health standards an alternative to prolonged consumption of and chronic exposure to unsafe drinking water.

Upgrading central treatment of all water in order to meet a particular MCL for the small fraction of water that is used for drinking is not always feasible. It may be preferable to provide bottled water for drinking purposes in a nursing home or other small system that is in violation of an MCL and to rely on central treatment for all other water uses in that nursing home rather than to undertake a costly upgrading of the entire system. Furthermore, small systems such as nursing homes and prisons with special populations may have no need even to meet particular MCL's such as fluoride and nitrate. We support allowing a public system to exceed an MCL if the population served by the system is not at risk from that contaminant or if the system provides bottled water to the portion of its consumers that is at risk from a particular contaminant. Providing nitrate-free bottled water to the pregnant mothers and infants in a small community may be far better as a means of compliance than upgrading central treatment of all water in order to meet an MCL for nitrate. Similar flexibility could be adopted for use where appropriate with respect to the variance and exemption provisions of the Act. For example, the ability of a small system to obtain a variance or an exemption could perhaps be based on grounds of economic hardship so long as during the period of the variance the system provided at-risk customers with bottled water.

The Use of Bottled Water As An Alternative Is Already Widespread

As a practical matter both government and the public have already acknowledged the viability of bottled water as an alternative to centralized treatment under certain circumstances. For example, EPA is authorized under the Act to conduct research on methods to achieve small system compliance and on ways to improve rural water supplies. One such study (the Weston Study), funded by the National Science Foundation, expressly includes consideration of the bottled water strategy for supplying safe drinking water to a small community.

Another example is in the area of environmental episodes. The bottled water industry has enormous experience in supplying public drinking water needs during periods of emergency. Public water systems try in every way to anticipate distribution failures. Unfortunately there are times when natural or man-made disasters occur that seriously impair the safety or availability of municipal drinking water. In numerous emergency situations, from earthquakes in Los Angeles to Hurricane Agnes to the Johnstown floods to the Three-Mile Island nuclear accident in Pennsylvania, the bottled water industry has performed as a reliable alternative to centralized treatment as a source of safe drinking water. Many bottled water companies also provide government-required certification that H.H.S.-approved hospitals and nursing homes can obtain bottled water in times of emergency. Further, the Department of Interior's Emergency Water Supply plan now specifies that state and local governments should inventory the capability of bottled water companies in their areas to meet national emergency needs. Likewise, the Army Corps of Engineers' emergency water plan provides for the use of bottled water. Finally, EPA's proposed National Contingency Plan under § 105 of the Superfund Act prescribes consideration of the use of bottled water as an alternative for community and private drinking water systems rendered hazardous by chemical contamination.

The capability of the bottled water industry to serve as an alternative during periods of emergency is, thus, already acknowledged by agencies of the Federal Government.

A third example of public acceptance of bottled water as an alternative is in the area of public notification of violations of the Safe Drinking Water Act. Under the Act, public water suppliers must provide the public with adequate notice of violations of Maximum Contaminant Levels. As a safe alternative source of drinking water, bottled water is in fact often used by individuals and communities that have received notice that their public water supply is in serious violation of the Safe Drinking Water Act.

Thus the bottled water industry has earned wide public and governmental acceptance of its role in meeting public drinking water needs, not only during floods, hurricanes and chemical spills, but also when the quality or taste of public supplies becomes inferior. Yet, Congress has not yet authorized EPA and the states to call upon this same expertise to meet the safe drinking water needs of consumers of small public systems (both community and non-community) that are chronically in violation of the health standards of the Safe Drinking Water Act.

Given the frequency with which chemical spills and other environmental disasters disrupt or contaminate public water supplies, it would be senseless if federal, state and local authorities were not allowed to call upon the expertise and assistance of the bottled water industry to meet emergency public drinking water needs. Fortunately, the Act does not preclude such emergency assistance.

Similarly, given the apparent frequency (according to the General Accounting Office) with which small public systems fail to meet the requirements of the Safe Drinking Water Act, it is inappropriate that government is not authorized to call upon the alternative sources capability of the bottled water industry to assist these systems to meet the health-related standards of the Act. It should make no difference whether public drinking water supplies are adversely affected by a chemical spill, by a hazardous waste disposal site, or by the chronic inability of small public systems to upgrade their centralized treatment. EPA and the states must possess the statutory authority to authorize use of bottled water (and other alternative sources of safe drinking water) as a flexible means of achieving compliance with the Act and protecting community health.

Bottled water is clearly a potential alternative to centralized treatment. Under appropriate circumstances it can serve as an alternative means of compliance in rural areas, in small communities, for non-community systems, or during periods of variance or exemption from compliance with Maximum Contaminant Levels or required treatment techniques.

Yet the Act fails to authorize the use of this or any other alternative to centralized treatment as a means of compliance. As a consequence, millions of consumers continue to be served by small public systems and by non-community systems that apparently are in violation of the health standards of the Safe Drinking Water Act but which are, for economic reasons, virtually ignored by states and the Federal Government. Indeed, according to the General Accounting Office, even the public notification requirements of the Act, intended by Congress as a supplement to government enforcement, are frequently ignored by public systems in violation of health criteria.

Surely it is better for Congress to authorize the use of bottled water as an alternative to centralized treatment than to continue to allow non-compliance with health-related MCL's by public systems that are economically unable to upgrade. This approach is fully compatible with the laudable attempt of the Reagan Administration to place greater reliance on private industry as a means of meeting public objectives. It also conforms with the Reagan Administration's effort to make regulation more flexible in response to special local needs and cost considerations.

Conclusion

In summary, our principal aim in appearing before you today is to urge that Congress amend the Safe Drinking Water Act to acknowledge the potentially significant role that the bottled water industry can play in providing an alternative for millions of consumers increasingly in need of an alternative to centralized treatment for safe, quality drinking water.

First, Congress should introduce greater regulatory flexibility into the Act. There is a need for greater awareness of and reliance on alternatives to centralized treatment for accomplishing the goals of the Safe Drinking Water Act. Specifically, small public water systems that are in violation of the Act and that can, under certain circumstances, utilize an alternative means of compliance, such as bottled water, should be allowed to do so. If upgrading of central treatment is feasible, systems in violation should in the interim be permitted to undertake alternative measures, including if practical the use of bottled water to provide quality drinking water to at-risk populations while these systems are moving into compliance.

Secondly, Congress should require that the National Drinking Water Advisory Council contain a representative with expertise in the alternative source capability of the bottled water industry. Bottled water is one of two federally-regulated sources of drinking water. It is the principal regulated alternative to centralized treatment. The total population is now vitally concerned with the availability of alternatives to centralized treatment and when to use them. Representation on the Advisory Council would assure that the interests of our industry, of the millions of consumers of bottled water and of the general public, increasingly concerned with alternatives to centralized treatment, are accounted for under the Safe Drinking Water Act. Let me emphasize that we are not seeking a member of our Association staff or the owner of a bottled water company to be this representative. Rather, the Council should include an individual who has expertise in our industry and who is also scientifically and consumer-minded so as to contribute in all areas of discussion by the National Drinking Water Advisory Council.

Thank you for this opportunity to present our views. We will work with your Subcommittee and with EPA in the months ahead to provide any additional information and to provide proposed language by which the Act could be amended to inject this necessary element of flexibility into the regulation of drinking water safety.

ATTACHMENT I

Comments Submitted By the
International Bottled Water Association
Regarding the Safe Drinking Water Act Amendments
Before the Toxic Substances and Environment
Oversight Subcommittee of the Environment and
Public Works Committee of the U.S. Senate

March 29, 1982

The bottled water industry is particularly interested in amending the Safe Drinking Water Act in order better to accommodate the relationship between the regulation of tap water by EPA and the regulation of bottled water by FDA.

We feel this is best accomplished by amending the Safe Drinking Water Act to require representation on the National Drinking Water Advisory Council ("Council") of the bottled water industry.

Role of National Drinking Water Advisory Council

The overriding objective of Congressional legislation regulating drinking water is the establishment of reasonable safety and quality standards for public water systems and bottled water. In the pursuit of this objective, the Safe Drinking Water Act provides EPA with lead responsibility, both for other federal agencies including FDA, and for state and local governments. In order to assist EPA in exercising its leadership responsibilities in a manner that reflects the breadth of public interests in drinking water issues, Congress created the National Drinking Water Advisory Council.

IBWA believes that there are important legal and public policy grounds for amending the Act to require that the

Council include an expert from the bottled water industry. Allow me to describe in some detail the basis for this proposal.

First, we believe that representation of the bottled water industry on the Council would facilitate exercise of the legal relationship between EPA and FDA on drinking water matters. The Administrator of EPA is required to appoint members to the Council after consulting with the Secretary of H.H.S. It is, therefore, not unreasonable to conclude that Congress actually intended that Council membership possesses expertise in bottled water, the major aspect of drinking water for which the Secretary of H.H.S. has responsibility. Bottled drinking water is primarily regulated by FDA under the Federal Food, Drug and Cosmetic Act, as a "food" or "food substance". But bottled water is also indirectly regulated by the Safe Drinking Water Act. Section 4 of the SDWA amends the FFDCA to require the Secretary of H.H.S. to consult with the Administrator of EPA whenever the Administrator promulgates safe drinking water standards for public water supplies. Section 4 requires the Secretary to follow suit with the same standards for bottled water within 180 days or to publish in the Federal Register his reasons for not doing so.

Furthermore, EPA and FDA several years ago signed a Memorandum of Understanding that defines the respective jurisdiction of the two agencies over drinking water. The

Memorandum unequivocally affirms the close interrelationship between EPA and FDA on drinking water matters. While FDA is primarily responsible for the regulation of bottled water and other so-called "food" uses of drinking water, EPA will play an increasingly larger role under the Memorandum of Understanding and the SDWA in matters that will ultimately determine all federal drinking water policy.

Thus, the Act has created a binding relationship between EPA in the regulation of tap water and FDA in the regulation of bottled water. The Act should expressly require that Council membership reflect the relationship by including an expert from the bottled water industry.

Besides the *de jure* relationship between the regulation of public water supplies and bottled water, the Administrator of EPA undertakes activities under the Act that have a substantial *de facto* impact on FDA, on bottled water, and on other food uses of drinking water. A discussion of the following activities also indicates the wisdom of our proposal to require that the Council have expertise in bottled water.

a. Under the Act EPA is charged with conducting research on improved methods for providing a dependably safe supply of drinking water, including improvements in water purification and distribution.

The bottled water industry has long utilized and is expert in advanced methods of drinking water purification that are only now being suggested for use by public water suppliers, e.g., activated carbon, ozonation and reverse osmosis. Expertise from the bottled water industry on the Council could be invaluable to EPA in evaluating the efficacy and feasibility of such treatment systems.

b. The Act also directs EPA to undertake research on direct and indirect chemical additives used in drinking water.

Decisions made by EPA as a result of this research will directly affect the food uses of drinking water and could well determine FDA's action with respect to the bottled water industry. Presumably, the Council will be asked to review the results of this research and to comment on whether it suggests the need for additional legislation or regulation on chemical additives to drinking water. Clearly the advice of the Council in this regard would be inadequate if it fails to account for the effect on the bottled water industry of federal regulation of drinking water additives.

c. EPA also is authorized to conduct research on methods for small system compliance and on ways to improve rural water supplies.

This research should include evaluations of the cost and quality of water that can be provided using different strategies to deliver safe drinking water to rural areas. It will also include research on methods for small public water systems not in compliance with MCL's to protect the public and come into compliance. Indeed, one such study (the Weston Study) is currently being funded by EPA and expressly includes consideration of the bottled water strategy for supplying safe drinking water to a community. EPA can also evaluate interim measures that public water suppliers must utilize during the period of a variance or exemption in order to protect public health from inadequately treated drinking water.

Bottled water is clearly a potential alternative source for use under appropriate circumstances in rural areas, in small communities, for non-community systems, or during periods of variance from compliance with Maximum Contaminant Levels or required treatment techniques. Expertise in the bottled water industry on the Council would, thus, provide EPA a broad perspective of how best to assure safe drinking water under these circumstances.

d. EPA also is authorized to provide financial and technical assistance to states and to public water systems for use in alleviating any emergency situation affecting public water systems or sources.

The bottled water industry has enormous experience in supplying public drinking water needs during periods of emergency. Public water systems try in every way to anticipate distribution failures. Unfortunately there are times when natural or man-made disasters occur that seriously impair the safety or availability of municipal drinking water. In numerous emergency situations, from earthquakes in Los Angeles to Hurricane Agnes to the Johnstown floods to the recent Three-Mile Island nuclear accident in Pennsylvania, the bottled water industry has performed as a reliable alternative and independent source of safe drinking water. Indeed, many bottled water companies provide government-required certification that H.H.S.-approved hospitals and nursing homes can obtain bottled water in times of emergency. Further, the Department of Interior's Emergency Water Supply plan now specifies that state and local governments should inventory the capability of bottled water companies in their areas to meet national emergency needs.

In this era of rising concern over chemical spills, abandoned hazardous waste sites and ground water contamination the expertise of the bottled water industry in meeting emergency demand for drinking water should now, more than ever before, be represented on the Council.

e. Under the Act, EPA must also explore ways to provide the public with adequate notice of violations of Maximum Contaminant Levels by public water systems.

As a safe alternative source of drinking water, bottled water is in fact often used by individuals and communities that have received notice that their public water supply is in serious violation of the Safe Drinking Water Act. Therefore, questions of the extent and content of public notification under the Act are important to the bottled water industry and to large numbers of people who wish to be informed of available drinking water alternatives and when to use them. The Council and ultimately EPA, in deliberating on public notification issues, need to be cognizant of this fact.

In summary, either as a matter of law or as a practical matter, major decisions made by EPA under the Act significantly affect the bottled water industry. The decisions of EPA directly influence FDA's regulation of bottled water. They have an impact on the millions of people who consume bottled water, as well as the total population that is concerned with knowing of the availability of alternatives to central treatment and when to use them. The proper administration of the Federal drinking water program requires the inclusion on the Council of expertise in the technology, quality and regulation of bottled water. Legislation requiring that the bottled water industry be represented on the Council will assure that the Council not continue to advise the Administrator as if EPA's decisions had no impact other than on those who regulate, supply and drink tap water.

There are other aspects of the Safe Drinking Water Act that we believe may warrant legislative refinement. Certain of these are reflected in bills currently pending in Congress.

In particular, we see a need to introduce greater regulatory flexibility into the Act by allowing EPA and the states to rely more on private industry as an alternative to central treatment. There are numerous special situations where bottled water as an alternative source of safe drinking water can supplement a public water supply that is not in compliance in order to better serve the consumer.

Alternatives to Compliance With Maximum Contaminant Levels

EPA has raised the question of whether there should be greater flexibility with respect to the enforcement of Maximum Contaminant Levels. IBWA believes that under certain circumstances a public water supplier whose water exceeds an MCL should be permitted the flexibility of utilizing alternatives to central treatment as a means of complying with the Act. Upgrading central treatment of all water in order to meet a particular MCL for the small fraction of water that is for drinking is not always feasible. It may be preferable to provide bottled water for drinking purposes in a nursing home or other very small system that is in violation of an MCL and to rely on central treatment for all other water uses in that nursing home rather than to undertake a costly upgrading of the entire system. Furthermore, small systems such as nursing homes and prisons with special populations may have no need even to meet particular MCL's such as fluoride and nitrate. We support allowing a system to ignore an MCL if the population served by the system is not at risk from that contaminant or if the system provides bottled water to the portion of its consumers that is at risk from a particular contaminant. Providing nitrate-free bottled water to the pregnant mothers and infants in a small community may be far better as a means of compliance than upgrading central treatment in order to meet an MCL for nitrate. Similar flexibility could be adopted with respect to the variance provisions of the Act so that the ability of small systems to obtain a variance could be based on grounds of economic hardship so long as during the period of the variance the system provided at-risk customers with bottled water. Surely the use of bottled water as an alternative is preferable to allowing continued non-compliance with health-related MCL's by systems that are economically unable to upgrade.

This approach is fully compatible both with the laudable attempt of the Reagan Administration to place greater reliance on private industry as a means of meeting public objectives and with the Administration's effort to make regulation more flexible in response to special local needs and cost considerations.

Performance Standards vs. EPA Specified Treatment Technology

Senate Bill 1866 and House Bill 4509 would prohibit EPA from specifying treatment technology that must be used by public systems. IBWA sees merit in the proposition that industry should retain the authority to determine how best to comply with drinking water safety standards set out by EPA. Indeed, we are asking that public suppliers have the flexibility to utilize the bottled water industry as a means of compliance with MCL's.

However, we are concerned that a prohibition on EPA's authority to specify a treatment technique may in turn cause

EPA to decline to adopt necessary controls for those contaminants which could be controlled by a specified treatment technique but for which monitoring is difficult or costly. This must not happen.

Accordingly, IBWA believes that this Senate Subcommittee and EPA should explore the degree of the risk that such an undersirable result may occur if EPA is precluded from specifying a treatment technique. A thorough evaluation and discussion of the risk is an essential prerequisite to any amendment in the authority.

Congress should also consider other approaches such as amending the Act to allow EPA to specify a treatment technique only where a specified contaminant would otherwise go unregulated because of the technological inability to monitor for an MCL for the contaminant.

Monitoring Flexibility

Worthwhile proposals have been offered to allow public systems greater flexibility to refrain from monitoring for specified contaminants where the raw water source does not present a threat of containing such contaminants. IBWA's concern is over how the public supplier would determine the accidental presence of specified contaminants if periodic monitoring is not required. Thus, EPA and Congress must consider this problem before blanket discretion is granted for EPA to exempt public suppliers from monitoring requirements.

Monitoring flexibility, once adopted, should, of course, be afforded both public water suppliers and the bottled water industry.

Health Advisories

On a case-by-case basis, EPA has undertaken the necessary task of issuing health advisories to state and local governments faced with chemical contamination of their public water supplies. To the extent that certain municipalities or public water suppliers contest EPA's authority to issue such advisories under the current law, we support amending the Act to provide an unequivocal specification of EPA's authority to do so.

EPA is clearly the research and regulatory leader in matters of safe drinking water. Given the frequency with which chemical spills and other environmental disasters disrupt or contaminate public water supplies, it would be senseless for local authorities not to be allowed to call upon this federal expertise for guidance. Indeed, IBWA urges that EPA be granted the additional authority under the Safe Drinking Water Act to perform a limited advisory role similar to that spelled out in the Superfund Act, i.e., where public drinking water has been significantly threatened or affected by a contaminant for which EPA is also issuing a health advisory, EPA should also possess authority to advise with respect to the availability of alternative sources of safe drinking water.

Conclusion

In summary, our principal aim in appearing before you today is to urge that you acknowledge the significant impact that the Environmental Protection Agency and regulation under the Safe Drinking Water Act have on the bottled water industry, on the millions of consumers of bottled water, and on the general public increasingly in need of alternatives to central treatment as a source of drinking water. We believe that this impact can be accounted for primarily by utilizing the Council mechanism that was created by Congress in order to assure that a broad base of expertise is brought to bear prior to taking action under the Act. Congress should require that the Council contain a representative of the bottled water industry. Even if certain other desirable amendments talked about today prove to be impossible this year, accomplishing this first step would over the long-range promote greater regulatory flexibility and greater reliance on private alternative sources of drinking water.

Congress should also introduce greater regulatory flexibility into the Act. Specifically, small public water systems that can utilize a bottled water alternative under certain circumstances should be allowed to do so. Small systems should be allowed a variance based on a showing of economic hardship. But this should be allowed only if interim measures are taken, including if feasible the use of bottled water, to provide quality drinking water to at-risk populations during the variance period.

Clean
Water
Action
Project

1341 G St., N.W.
Washington, D.C. 20005
(202) 638-1196

Testimony of
Ed Hopkins

AMERICAN CLEAN WATER ASSOCIATION
CLEAN WATER ACTION PROJECT

on
Safe Drinking Water Act

before

SENATE COMMITTEE ON ENVIRONMENT

SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

Slade Gorton, Chairman

March 29, 1982

Mr. Chairman, my name is Ed Hopkins, and I am pleased to testify today on the Safe Drinking Water Act on behalf of the American Clean Water Association and Clean Water Action Project.

I would like to introduce the other members of the panel. They will speak about innovation in the water treatment industry, the development of low-cost, effective treatment systems, and the problems implementation of the Safe Drinking Water Act poses for small communities.

Arther MacNeill of John S. MacNeill, Consulting Engineers has had extensive experience with drinking water problems in small communities and will report on an EPA-funded demonstration project in Cayuga, New York.

Dr. Lawrence Wang, Research Manager of the Lenox Institute for Research in Lenox, Massachusetts, and Dr. Milos Krofta, President of Krofta Engineering, have developed an innovative drinking water treatment system which, at a fraction of the cost of a conventional treatment facility, provides higher quality drinking water.

ACWA is a membership association of people involved in the water and waste management field. Our members work in many disciplines and come from business, government, and private, non-profit institutions. As an association, we are dedicated to encouraging clean water at an affordable price. As individuals, our members hope to make their fortunes and reputations by producing cleaner drinking water and by treating wastewater more economically. Clean Water Action Project is a national non-profit public interest organization working with citizens and consumers around the country to safeguard drinking water supplies and stop pollution.

The public concern for safe drinking water that prompted Congress to pass the Safe Drinking Water Act in 1974 remains strong. Robert McGarry, general manager of the Washington Suburban Sanitary Commission, testified in 1977 before the House Subcommittee on Health and the Environment that 77 percent of his 1.2 million customers were willing to pay higher water bills to insure a drinking water supply of high quality and to reduce health risks. Last fall, Lou Harris, the pollster, testified before the same Subcommittee that 86 percent of the American public opposed the weakening of the Clean Air Act. He noted that "the public considers water pollution a more serious problem in light of spills and the possible presence of carcinogens in drinking water". The public not only wants clean water, it is willing to pay for it. The tremendous growth of the bottled water and point-of-use water treatment industry attests to that.

Unfortunately, despite the passage of the Safe Drinking Water Act, there is little evidence to suggest that the public demand for safe drinking water is being met. EPA has failed to implement fully a host of laws designed to prevent toxics from entering the water, including the Toxics Substances Control Act, the Resource Conservation and Recovery Act, the Clean Water Act, and the Superfund legislation. Unable to prevent contaminants from entering the water, EPA was then challenged to keep those contaminants from finding their way to consumer's taps. The progress has not been encouraging.

The National Organics Monitoring Survey found that hundreds of organic chemicals whose health effects are largely unknown are commonly found in drinking water systems throughout the country. In response to these potential health threats, EPA continues to rely upon a handful of Interim Primary Drinking Water Regulations— formulated twenty years ago by the Public Health Service— which address only microbiological and inorganic contaminants. The Agency has yet to respond seriously to the contamination of groundwater, the source of water for half the population. In short, the threat to public health is serious;

the response has been anemic.

This year, the Congress will consider making a number of changes in the Safe Drinking Water Act. We propose that any change in the law meet one test: improve the quality of public drinking water and create a more informed public. With promising innovations in the water treatment industry, we believe that the goal of safer drinking water can be achieved in a cost-effective manner.

My testimony will address the changes in the law proposed by S. 1866 and the drinking water problems of small communities.

BASIS FOR STANDARD SETTING

Our knowledge of drinking water contaminants and their potential health effects is severely limited, as evidenced by the inconclusive National Academy of Sciences report, Drinking Water and Health. The Safe Drinking Water Act acknowledged this by requiring the Administrator to promulgate regulations for "each contaminant which, in the Administrator's judgement, may have any adverse effect upon the health of persons." This preventive language should be retained. It insures that the public health can be protected before health hazards pose an unreasonable risk. To condition regulation upon conclusive proof that drinking water contaminants cause harm is, in effect, a decision to postpone action for decades. The economic and social costs of such a decision— allowing unlimited exposure to potentially dangerous materials in cases where the costs of removing them are small— could be significant.

By injecting considerations of cost at the outset, the proposal to substitute the phrase "pose an unreasonable risk" would effectively eliminate the study of those contaminants about which least is known. The result would be the perpetuation of ignorance.

It is misleading to suggest that the current law allows the Administrator to use a crystal ball to set regulations. The Safe Drinking Water Act authorizes standards which protect health to the extent "feasible...taking cost into consideration." In effect, the concept of a reasonable balance between potential health risks and costs of eliminating those risks is already inherent in the legislation.

Furthermore, the history of the Safe Drinking Water Act's implementation suggests that the EPA has not abused its authority to regulate contaminants which may have any adverse effect on health. No standard has been established for benzene, a known human carcinogen, or for a large number of commonly found known or suspected carcinogens.

RED TAPE

S. 1866 proposes changes in administrative procedures which threaten to tie up needed regulations in red tape. The principal new proposed requirement is

> a determination that the costs of compliance with the rule are justified by the benefits resulting from the application of such rule, together with a detailed analysis setting forth (i) the factual data on which such determination is made, and (ii) the reasons for such determination.

Since the current Safe Drinking Water Act requires that the Administrator take costs into consideration when proposing regulations, imposing a rigid cost-benefit anaylsis seems unnecessary and of dubious validity. Our lack of understanding of potential health effects of drinking water contamination would make any cost-benefit analysis a value-laden rather than a scientific exercise. These analyses are suspect for a variety of reasons: costs projections based on existing technology often fail to take innovation into account; cost data are generally supplied by the regulated industry and are usually inflated; the cost of regulation would be incurred in the short term and easily quantifiable while the benefits of reduced exposure to contaminants are less easily calculated and would accrue over decades; intangible and indirect benefits of regulation are not as easily quantified as costs.

Requiring a cost benefit analysis in addition to the other administrative procedures specified in this provision would strain EPA's limited resources as well as impede the promulgation of needed regulation. Statutory checks in the Safe Drinking Water Act and the Administrative Procedures Act provide sufficient safeguards against bureaucratic excesses. Experience shows that all these questions are always studied and debated at length whenever a controversial proposed regulation is put forward. More red tape is unnecessary, costly and wasteful, and detrimental to public health. What we need instead is more results.

STATE GRANTS

Under the Safe Drinking Water Act regulations become effective 18 months after promulgated. S. 1866 provides that primacy states shall have an additional 18 months from the effective date of a national regulation to demonstrate that its program meets the new requirements. An additional six months may be granted at the discretion of the Administrator. During this entire period of 36-42 months, a state will continue to retain its primary enforcement responsibilities.

The current practice of allowing states 18 months seems to be working well; we recommend that it be retained. This provision would make the water safety in primary states lag behind that of non-primary states. To our knowledge, 18 months has provided sufficient time for states to adopt regulations needed to protect public health.

TREATMENT TECHNIQUES

In cases where setting a maximum contaminant level is either economically or technically infeasible, the Administrator is authorized to require the use of a particular treatment technology. The Administrator must take costs into account in determining the availability of a technology. Variances from the requirement may be granted if an alternate technique can be shown to be equally effective or if the raw water source is sufficiently clean so as to make the application of the technology unnecessary. Given the number of contaminants in the water, the high costs of monitoring for them, and their possible synergistic effects on health, prescribing treatment techniques to reduce the level of contaminants and classes of contaminants may in many cases be the most cost-effective way to protect public health.

S. 1866 would delete this authority. Under no circumstances could the Administrator require the use of a particular treatment technology. This provision ignores the fact that for many contaminants the cost of utilizing a treatment technology to reduce the level of contaminants is lower than the cost of monitoring for them. Furthermore, the cost of setting individual maximum contaminant levels for thousands of contaminants found in drinking water would be staggering. The more cost-effective approach of requiring the use of treatment techniques should be retained in the law.

To eliminate this section of the law because of the misleading claims of the regulated industry that the authority has been abused would be extremely ill-advised. If anything, the Agency is remiss in not having used it. If a treatment technology were develcped tomorrow that could reduce significantly the level of organic contaminants in drinking water for a small increase in cost, the Agency would be prevented by S. 1866 from requiring it regardless of its potential benefits.

Requiring particular treatment techniques may spur much needed innovation in the water treatment field. It would encourage the development of less expensive treatment systems as alternatives to the required technique. It would increase incentives to find cost-effective means of protecting raw water supplies so that communities would not be forced to implement the technique.

SMALL COMMUNITY WATER SYSTEMS

A recent General Accounting Office report ("States' compliance lacking in meeting Safe Drinking Water Regulations") highlights the numerous problems of small communities in implementing and complying with the Act. Untrained operators, inadequate facilities, and large number of violations with little enforcement are common problems in small communities. Congress should act in the following areas to address these problems rather than merely adjusting the law to make them disappear from sight.

1.) Encourage groundwater protection: The vast majority of small communities rely on groundwater as their source of drinking water. Over the past few years hundreds of wells serving millions of people have been closed owing to the presence of relatively high levels of organic chemicals. The irreversible nature of groundwater contamination, coupled with the fact that nearly half the population relies on groundwater suggests that Congress and EPA should consider it a priority.

Congress and EPA should move aggressively to develop and implement a comprehensive strategy to protect the water supplies upon which most small communities rely. Small communities may encounter special difficulties implementing the Act, but the EPA should not allow these problems to distract it from its principal mission: assuring safe drinking water.

Senator Moynihan's bill, S. 2131, provides limited support for the protection of groundwater and could be an element of a comprehensive groundwater strategy. It is certainly a step in the right direction and deserves the consideration of Congress.

2.) Promulgate standards: Little regular monitoring of drinking water quality takes place in small communities except for those contaminants for which maximum contaminant levels have been established. More standards should be promulgated so that drinking water will be monitored for more contaminants. Otherwise, communities will never know they have a problem. Ignorance of the problem is not a sound basis for decisionmaking. Variances and exemptions can be granted if communities lack the means to improve their treatment systems.

3.) Improve training of rural treatment plant operators: In recent years, EPA has given grants to organizations to train rural treatment plant operators. The Administration has not requested training funds for FY 1983 and the States lack the resources to fulfill this need. Some private organizations have played a helpful role in this regard, but drinking water quality in rural areas is unlikely to improve without greater attention to this problem. Congress should direct EPA to address this situation and provide the resources to do it.

4.) Promote research and innovation: Part of the solution to small communities' drinking water problems lies in developing more appropriate, affordable treatment technologies. The private sector is beginning to meet this need. The people with me today are evidence of that. For the private sector to invest resources in developing less costly treatment technologies, however, Congress and the EPA must provide the assurance of a market. Weakening the basis for setting standards, permitting states to drag their feet in adopting regulations, and lax enforcement of the law send exactly the wrong signal. Innovation will be encouraged by stricter standards, certainty in the statutory and regulatory structure, and enforcement of the law.

EPA can play a valuable role in developing new technologies and evaluating the technologies developed by the private sector. Without some evaluation for new technologies, state regulators will be reluctant to implement them. For FY 1983, the Administration has requested about 30 percent less for research and development than in FY 1982. EPA's role in drinking water research and development needs greater definition--and more money. This generation's pollutants cannot be kept out of the drinking water using the treatment technologies of the last generation.

5.) Enforcing the law, including the public notification provision: The FY 1983 budget request reduces federal grants to states by about 20 percent. Though I have not contacted all the state agencies, several state program directors have indicated to me that in their states funding for this program is either being reduced or maintained at last year's level. Inevitably, this will mean less monitoring and enforcement and less state assistance to small water systems. Because the enforcement of the public notification requirements is not one of the states' top priorities, reduced resources mean that it is likely to go largely ignored. The GAO report strongly implies that this is already the case.

With the prospect of less state enforcement, consumers must be given the tools to evaluate their drinking water. The public should be permitted the opportunity to be fully cognizant of the quality of their drinking water and the operation of their water supply system. Congress should reemphasize the importance of the public notification provision in reauthorizing the Act and insist upon its enforcement. The notification should be clear, comprehensible, and timely.

CONCLUSION

The potential for informed decisionmaking at the local level depends on monitoring, demand for change, and consumer information. Under the law, these depend on the existence of a standard. Thus, the way to deal with small town problems should not be to set different standards; that approach would simply leave them in the dark. In the short run the difficulties of small towns should be handled with exemptions where they are necessary. In the long run the solution is raising the capability of small communities to protect their residents as suggested above.

Papermill Equipment
Effluent Clarification

KROFTA®

KROFTA ENGINEERING CORPORATION

LENOX, Massachusetts 01240
101 Yokun Avenue
Phone : (413) 637 - 0740
Cable : Krofta - Lenox
Telex : 92-6443 krofta leno

TESTIMONY OF

Milos KROFTA, P.E., Ph.D.

President of

KROFTA ENGINEERING Corporation, LENOX, Mass. 01240

and of

Lawrence K. WANG, P.E., Ph.D.

Research Manager of

LENOX INSTITUTE FOR RESEARCH, Inc., LENOX, Mass. 01240

on

Safe Drinking Water Act

before

Senate Committee on Environment and Public Works

Toxic Substances and Environmental Oversight

Slade Gorton, Chairman

29 March 1982

Innovation in the Water Treatment Field and Systems appropriate and affordable for smaller Communities

How to improve potable water quality by :

DRASTICALLY REDUCED FEDERAL AND STATE FINANCING
WITH
THE HELP OF INNOVATIVE TECHNOLOGY
BY
INCREASED *EPA* WATER TESTING AND ENFORCING
AND
DEREGULATION OF RIGID *EPA* EQUIPMENT SPECIFICATIONS

PRESENTLY THE *EPA* DOES:

- Give Standards for potable water quality
- Approve and/or recommend the technology and construction of water treatment plants
- Provide approval for public funding
- Control and enforce the quality of potable water

This procedure leads to high cost of water treatment installation and to possible overdesign because of :

- No competition between different and established technologies. Innovative technologies are excluded from free competition and subject to rigid *EPA* approval procedures.

- This process leads to a conflict of interest in the Consulting Engineering Companies selected by the municipality for the design of the treatment plants as it leads to possible larger and costlier installations.

- This procedure further leads to a difficulty in *EPA* enforcements as in the case of equipment malfuctioning. Municipalities refuse responsibility as the equipment was approved and/or specified by *EPA*. Since the *EPA* approved the funding, ultimate responsibility is assumed to lie with *EPA*, resulting in a stalling of necessary corrections.

March 1982

MAIN COST FOR POTABLE WATER.

Assuming that current most common treatments of surface waters are :

- Chemical flocculation
- Sedimentation
- Sandfiltration

the following are the approximate costs of potable water :

Piping distribution and chlorination	$ 1.00 - 1.20 /1000 Gal.
Treatment Plant Operational costs (chemicals, power labor)	$ .06 - .11 /1000 Gal.
Treatment Plant Investment ammortisation (20 years @ 10%)	$ .50 - .60 /1000 Gal.
Total	$ 1.75 - 1.90 /1000 Gal.

The piping distribution is a very large item, however it is not part of the water treatment and is covered by the property tax.
The chlorination is standard equipment and has a minor influence.
The highest impact is the yearly ammortisation of installation costs (50 – 60 c/1000 Gall.).

FLOTATION TECHNOLOGY.

In order to reduce the installation cost is imperative to apply flotation technology as is used in Scandinavia and England, but not yet in the USA.

This technology uses the flotation principle in place of conventional settling process. Flotation floats the particles 5 times faster than sedimentation settles. The flotation process uses retention times of 3 – 10 minutes, compared with sedimentation that needs 60 – 120 minutes. This means a smaller plant and results in less expensive installtion, less housing, less land, etc..

We have specialized in flotation treatment for 30 years and are presently installing one 1 MGD Sandfloat potable water treatment plant in our town, Lenox, Massachusetts. (Further details will be given by Dr. Wang).
We have submitted to the city of Pittsfield, Massachusetts proposals for a potable water treatment plant for 25 MGD for the sum of $ 5,188.000.--. A Boston Consulting Company has submitted a proposal for the same capacity for $ 25,429.000.--.

March 1982

WATER TREATMENT PROJECT FOR PITTSFIELD, Mass.

Location : City of Pittsfield, Mass., population 50,000, (largest industry, General Electric Corp.)

Average water consumption : 15 MGD (including 6 MGD for G.E.)
Maximum water consumption : 25 MGD
Water source : 3 surface reservoirs

September	1980	– Pittsfield residents complaining about water quality (turbidity and color) Boston consulting company to prepare a preliminary report for a Water Treatment Plant. – Krofta Engineering Corp. sets up pilot plants to treat Pittsfield potable water with dissolved air and alternately dispersed air flotation technology. Duration of tests 3 months (Lit.Ref. NTIS No. PB82-118798 Feb.1981).
August	1981	– Boston consultants prepare preliminary project for Pittsfield Water Treatment Plant with an estimated cost of $ 27,754,000.--
September	1981	– Krofta Eng. Corp. suggests the use of flotation technology with a proprietary SANDFLOAT Clarifier resulting in $ 4,370,000.-- savings against sedimentation.
November	1981	– Boston consultants reduce their cost estimate to $ 25,500,000.--.
Jan./February	1982	– Krofta Eng.Corp. proposes two plants instead of one central plant for $ 5,188,000.-- including one 100 HP Hydraulic Power Plant.
February	1982	– Pittsfield City Mayor Ch.Smith hires Hartford, Conn. consulting company to independently evaluate both proposals.
March	1982	– Hartford, Conn., consultants recommend the Krofta Flotation Clarifier at the Pittsfield Water Commission public meeting. (See enclosed newspaper article).

March 1982

The following are the data from the comparative report made by Hartford consultants :

TABLE 2 – 3
COST COMPARISON OF PROPOSED WATER TREATMENT SYSTEMS
(Assuming no state grant funds)

Item	M&E Proposed System	KEC Proposed System	KEC As % of M&E	Difference in Dollars
Transmission Lines	$ 6,574,000	$ 1,310,000	19.2	$ 5,517,000
Diversion Pumping Station	$ 655,000	$		$ 655,000
Filtered Water Storage	$ 1,600,000			$ 1,600,000
Treatment Plants	$ 16,600,000	$ 3,878,000	23.3	$ 12,722,000
Total	$ 25,429,000	$ 5,188,000	21.5	$ 20,241,000
Annual Debt Service @ 0.11746 and NO State Aid	$ 2,987,000 53 c/1000 Gal.	$ 609,000 11 c/1000 Gal.	20.4	$ 2,378,000
O&M + Power	$ 605,000 11 c/1000 Gal.	$ 358,000 6 c/1000 Gal.	59.2	$ 247,000
Annual Cost of New Systen, NO Aid	$ 3,592,000 64 c/1000 Gal.	$ 967,000 17 c/1000 Gal.	27.0	$ 2,625,000
Annual Cost for Present System	$ 2,000,000 36 c/1000 Gal.	$ 2,000,000 36 c/1000 Gal.		
Increase in Cost of Water Service, NO Aid	$ 180 % 64 c/1000 Gal.	48 % 17 c/1000 Gal.		
Total Annual Cost of New System, NO State Aid	$ 5,592,000 100 c/1000Gal.	$ 2,967,000 53 c/1000 Gal.	53.0	$ 2,625,000
Annual Savings		$ 2,625,000		
20 yr Savings		$ 52,500,000		

As shown the treatment cost including ammortisation for the sedimentation system would be 64 c/1000 Gal. compared with only 17 c/1000 Gal. for the flotation system.

The basic present water cost charged to the public (pumping, distribution and chlorination) is very low (36 c/1000 Gal). By adding the flotation plant cost of 17 c/1000 Gal. the total cost would be 53 c/1000 Gal., which is still below usual water rates paid by the public of app. $ 1.50/1000 Gal..

WATER TREATMENT PLANTS SHOULD OPERATE AS UTILITIES WITHOUT FEDERAL OR STATE FUNDING.

The first condition for this is to install clarifiers with flotation technology, combined with sand filtration in order to obtain highly reduced installation costs.

A water rate of $ 1.5/1000 Gal. can then cover the operational, maintenance and installation costs as well as distribution improvement costs.

The average water consumption in middlesized cities and towns is 100 Gal./person/day, (60 Gal./person/day in Central Europe).

A household of 4 persons would pay $ 219.--/year, corresponding to 60 c/day (12 cigarettess).

Selling water is an ideal business :

- Raw material costs practically nothing
- it has captured consumers
- it has a monopoly and no competitors
- it operates and sells 365 days/year

By charging for water usage as stated above such an operation can be fully self-sustaining without the need of federal or state assistance, providing the initial installation cost is kept low with flotation technology.

March 1982

HOW TO LOWER THE INITIAL WATER TREATMENT PLANTS INSTALLATION COSTS .

CHANGE THE PRESENT PURCHASING SYSTEM FOR TREATMENT PLANTS.

MUNICIPALITY – CONSULTANT – *EPA* APPROVAL AND GRANT

MUNICIPALITY SHOULD REQUEST OPEN BIDDING for a complete treatment plant specifying the required water quantity and water QUALITY ACCORDING TO THE STANDARDS AS ENFORCED BY *EPA*.

The bidder should have the right to choose the technology without *EPA*'s approval restrictions, while the same time guaranteeing that *EPA*'s water quality standards will be met. **

Thus the *EPA* would be relieved from installations and grant approvals. The *EPA* could step up testing, monitoring and enforcement of its water quality standards and would no longer be restricted by previous commitments, recommendations and fundings.

THE RESULT WOULD BE – BETTER WATER QUALITY WITH THE ELIMINATION OF FEDERAL OR STATE FUNDING.

** This system is applied in France.

March 18

Lenox Institute for Research Inc.

LENOX, Mass. 01240
101 Yokun Avenue
☎ (413) 637-1681
Telex 92-6443

APFORDABLE MUNICIPAL WATER PURIFICATION SYSTEM FOR A TYPICAL SMALL COMMUNITY -- THE TOWN OF LENOX, MASSACHUSETTS

Technical Report No. LIR/03-82/4c

Submitted to:

American Clean Water Association
1341 G. Street, N.W., Suite 200A
Washington, D.C.

by

Dr. Milos Krofta, P.E.
President
Krofta Engineering Corporation
Lenox, MA 01240

and

Dr. Lawrence K. Wang, P.E.
Research Manager
Lenox Institute for Research Inc.
Lenox, MA 01240

for

Presentation Before the U.S. Senate,
Committee on Environmental and Public Works, Toxics Subcommittee
Washington, D.C., U.S.A.
March 29, 1982

I. INTRODUCTION

1.1 EXISTING WATER TREATMENT FACILITY AND PUBLIC HEALTH PROBLEMS

Lenox is a small town of 6,500 people, located in the Berkshire Hills of Western Massachusetts. Its water sources consist of two small surface reservoirs--Upper Root Reservoir and Lower Root Reservoir--which supply approximately 1 million gallons per day to the town. Chlorination is the only water treatment provided at an in-take station located near the Lower Root Reservoir. The chlorinated Lenox water contains moderate to high amounts of turbidity, color and trihalomethane precursors, which frequently exceed the U.S. Drinking Water Standards.

Since 1974, researchers both in this country (1) and in the Netherland (2) have discovered that chloroform, bromodichloromethane, dibromochloromethane, bromoform and other trihalomethanes (THM) are formed during the chlorination step in drinking water treatment. An intensive study by the U.S. National Cancer Institute in 1976 concluded that THM are carcinogens to animals and there are positive associations between drinking water quality and some human cancer sites (3). Another report on "Drinking Water and Cancer" released on December 17, 1980, by the U.S. President's Council on Environmental Quality (U.S. PCEQ) found that death statistics in Illinois, New York, Louisiana, North Carolina and Wisconsin provided fresh evidence to support an association between rectal, colon and bladder cancer and chlorinated water. The U.S. PCEQ study said the chance of dying from rectal cancer rose between 13 percent and 97 percent and noted slightly lower increases for the other two types of cancer among groups that drank chlorinated water containing THM. (4) Under the U.S. Safe Drinking Water Act provisions, these presumed health effects necessitated the U.S. Environmental Protection Agency (U.S. EPA) regulating the concentration of THM in drinking water. On November 29, 1979, the U.S. EPA promulgated an amendment to the National Interim Primary Drinking Water Regulations establishing a Maximum Contaminant Level (MCL) of 0.10 mg/l (or 100 ppb) for "Total Trihalomethanes". (5, 6)

Assessing the public health studies, the Town of Lenox has taken steps to lessen risks from THM by requiring water treatment to reduce the level of THM precursors and turbidity in water. The construction of a full scale affordable water purification system for improving the quality of Lenox water is in progress.

1.2 DEVELOPMENT OF INNOVATIVE WATER PURIFICATION SYSTEM

The Lenox Institute for Research Inc. (LIR) is a research and educational institution incorporated as a nonprofit, publicly supported organization. The Institute is devoted to the development of innovative water treatment systems which are affordable to small American communities. Under a research grant (No. KEC-80P06) sponsored by Krofta Engineering Corporation (KEC), Lenox, MA, LIR has initiated an engineering research project investigating the feasibility of using a cost-effective KEC flotation system for potable water treatment since June 1980. (7) The KEC system consists of chemical feeding, flocculation, dissolved air flotation and sand filtration. (8) Although this system is considered to be innovative in the U.S.A., it has been used extensively for some 16 years in Sweden, South Africa, and during the last 5 years in England where presently over 20 water treatment plants ranging from 0.6 to 10 million gallons per day (MGD) capacity are in operation or construction. (9, 10)

1.3 OBJECTIVES

This report introduces the first full-scale floculation/flotation / filtration plant (i.e. KROFTA SANDFLOAT) in construction. Laboratory and pilot plant data are presented for demonstration of the new system's technical feasibility. Reliable cost data from the U.S. EPA and facility manufacturers are compiled for assessment of the new system's economical feasibility.

It is concluded that the new flocculation / flotation / filtration system is, indeed, technically feasible for production of water meeting the existing U.S. Drinking Water standards, and economically feasible for adoption by small communities. It is expected that American communities, small or large, all can enjoy potable and palatable water in the near future. There is no need to relax the existing U.S. Drinking Water Standards for small communities.

1.4 QUALITY OF EXISTING TAP WATER

As previously stated, chlorination is the only water treatment provided by the Town of Lenox at an in-take pumping/chlorination station located near the surface reservoirs.

The following are the tentative conclusions drawn in this section:

1. The existing chlorination facility at the Town of Lenox can only kill the pathogenic bacteria, and is insufficient to produce a potable water meeting the U.S. Primary Drinking Water Standards and the Massachusetts regulations on turbidity.

2. The Lenox tap water's color, pH, iron and manganese violate the U.S. Secondary Drinking Water Standards.

3. Appropriate pre-treatment facilities in addition to chlorination are needed.

1.5 CONCEPTUALLY DESIGNED WATER PURIFICATION SYSTEM

Based on the conclusions drawn from previous sections, the following design criteria can be established for the Town of Lenox, MA:

1. Design Period: Year 2010
2. Design Population: 7000
3. Primary Water Resources: Lenox Reservoirs (Upper Root Reservoir and Lower Root Reservoir)
4. Supplemental Water Resources: Farnham Reservoir, Woodsey Reservoir, and Stockbridge Bowl (Lake Mahkeenac).
5. Average Daily Flow: 900,000 GPM
6. Maximum Daily Flow: 1 MGD
7. Minimum Design Requirements: Removal of turbidity and pathogenic bacteria for meeting the U.S. Primary Drinking Water Standards and the Massachusetts Drinking Water Regulations.
8. Better Design Requirements: pH control, and removal of turbidity, pathogenic bacteria, color, iron, manganese and trihalomethane precursors for meeting the U.S. Secondary Drinking Water Standards.
9. Process Chemicals: Disinfectant, alum, bentonite clay, pH adjustment chemical and Federal approved polymers (11).
10. Process System: Chemical feeding, flocculation, clarification, filtration and disinfection.

A number of water purification systems may be utilized for the removal of the target contaminants from water. Since the total hardness concentration in Lenox raw water is low, a softening process unit is not required.

Raw water is pumped into the intake unit where alum, bentonite clay, pH adjustment chemical and Federal approved polymers (11) are fed to a mixing/flocculation chamber. The added chemcials react with the target impurities by the so-called "chemical coagulation". The destabilization reaction of colloidal impurities results in formation of minute flocs by physical-chemical phenomina. Subsequent flocculation results in formation of larger, separatable flocs by bridging effect. These are the most important processes in a water treatment sequence to remove turbidity, color, trihalomethane precursors, iron and manganese. The enlarged flocs are the combination of spent chemicals and impurities. Over 90 percent of the flocs can be removed by one of the two clarification methods: sedimentation or flotation. The residual flocs in either the sedimentation effluent or the flotation effluent are usually further removed by a filtration unit. The filtration media can be sand, coal or activated carbon depending on treatment requirements. Disinfectants can be dosed at variious points within or outside of the water purification system. Potassium permanganate can also be dosed within the plant for iron and manganese removal, pre-disinfection, and prevention of biological growth in the filters. (12)

II. ECONOMICAL FEASIBILITY STUDY

2.1 CONVENTIONAL WATER PURIFICATION SYSTEM

The water purification system described in Section 1.5 is considered to be a conventional type if sedimentation is used for clarification. The basic process facilities include chemical feeders, mixers, flocculators, settlers, gravity filters, disinfection reactors, clearwell, pumps and sludge disposal units. the following are typical design conditions for a conventional water purification system with one MGD capacity:

1. Alum Feed System: 1
2. Sodium Hydroxide Feed System: 1
3. Polymer Feed System: 1
4. Rapid Mix Basin (700 gal, 1 min detention time): 1
5. Rapid Mixer (Velocity gradient, 700 sec^{-1}; 1 horsepower): 1
6. Flocculation Basins (21,000 gal; 30 min detention time): 2
7. Mechanical Flocculator (Velocity gradient, 50 sec^{-1}; 0.5 horsepower): 2
8. Sedimentation Basins (Overflow rate, 600 gpd/ft^2; Volume, 62500 gal each; weir length, 32 ft per basin): 2
9. Rapid Sand Filters (filtration rate, 2 gpm/ft^2; backwash rate, 15 gpm/ft^2): 2
10. Chlorine Feed System: 1
11. Clearwell: 1
12. Sludge Disposal System: 1
13. Laboratory: 1
14. Maintenance Building: 1

Based on reliable cost data from the U.S. Environmental Protection Agency (13, 14, 15), the costs (Note: all updated to the third quarter of 1981 and a locality factor of 1.12 applied) for the one-MGD conventional water purification plant shall be:

Cost Items	Cost Data	
	Without Granular Carbon	With Granular Carbon
Total Construction Cost	$ 998,808	$ 1,389,681
Total Capital Cost	$1,322,176	$ 1,903,638
Amortized Capital (at 7%, 20 years)	$ 124,802	$ 179,684
Annual O&M Cost	$ 120,756	$ 157,981
Grand Total Annual Cost	$ 245,558	$ 337,665

2.2 AFFORDABLE WATER PURIFICATION SYSTEM

In Section 1.5, the water purification system becomes affordable if dissolved air flotation (instead of sedimentation) is used for clarification. A special package plant (KROFTA SANDFLOAT) incorporating chemical mixing, flocculation, flotation and sand filtration all into one unit has been developed by Krofta Engineering corporation. (8) The following are the design criteria for a one-MGD SANDFLOAT Plant:

1. Alum Feed System: 1
2. Polymer Feed System: 1
3. Bentonite Clay System: 1
4. SANDFLOAT (Static mixer/flocculator; dissolved air flotation loading, 3.1 gpm/ft^2; 5.5 min detention; filtration rate, 2.5 gpm/ft^2 backwash rate, 15 gpm/ft^2): 1
5. Chlorine Feed System (Existing): 1
6. Sludge Disposal System: 1
7. Laboratory Area: 1
8. Maintenance Building: 1
9. Continuous Water Quality Monitoring System (HACH): 1

Detailed description of a full scale SANDFLOAT Plant in construction is presented in Section IV (FULL SCALE LENOX WATER TREATMENT PLANT). The actual cost breakdown of this one-MGD affordable water purification system is as follows:

1.	Equipment Cost	$ 192,000
2.	Building w/o Foundation	$ 30,000
3.	Sludge Disposal Facility	$ 6,000
4.	Ground Leveling & Building Foundation	$ 5,000
5.	Bypass Pipelines	$ 5,000
6.	Discharge Cost	$ 2,000
7.	Total Construction Cost	$ 240,000
8.	Engineering Cost	$ 5,000
9.	Total Capital Cost	$ 245,000
10.	Amortized Capital (at 7%, 20 years)	$ 23,126
11.	Annual O&M Cost	$ 12,775
	Grand Total Annual Cost (Oct. 1981)	$ 35,901

The annual O&M cost has been estimated to be $12,775 (or $35 per day). Considering the mortgage payment on the $245,000 KROFTA SANDFLOAT Plant, the total cost of the system to a consumer would be about $5.5 per capita per year, which is very reasonable and affordable.

III. TECHNICAL FEASIBILITY STUDY

3.1 CONVENTIONAL WATER PURIFICATION SYSTEM

It has been demonstrated that Lenox raw water can be adequately treated by conventional water purification system consisting of chemical feeding, mixing, mechanical floccultion, sedimentation, filtration, and disinfection, provided that appropriate types and dosages of coagulant and coagulant aid are used, and pH is properly adjusted. The system needs a huge sedimentation basin with about two hours of detention time.

Conventional system generally uses prechlorination for disinfection, iron removal, manganese removal and algae control. Prechlorination process will produce trihalomethane (THM). Laboratory experiments conducted at Lenox Institute for Research Inc. conclude that once THM is generated in a conventional flocculation/sedimentation/filtration system, only tertiary granular carbon adsorption can remove it. Additional construction cost and annual O & M cost for a one-MGD conventional water purification system with advanced granular carbon adsorption will increase significantly as discussed in Section 2.1.

In conclusion, the conventional water pruification system is technically feasible for potable water treatment, but is economically unfeasible for small communities, such as the Town of Lenox, MA.

3.2 AFFORDABLE WATER PURIFICATION SYSTEM

A pilot plant system investigated by Lenox Institute for Research Inc. (LIR) consists of static hydraulic mixing/flocculation (no moving parts), dissolved air floation (KROFTA SUPRACELL) and automatic backwash sand filter.

The primary distinguishing feature of the affordable KROFTA water purification system is that high rate dissolved air flotation is used for separation of suspended solids (i.e. flocs) from the flocculator effluent, as opposed to sedimentation in conventional water purification system. The concept of using flotation for water-solid separation is not new (16). The major deterrent to flotation use in the minicipal and industrial processes invisaged by these early practicing engineers was ecconomics, with objections centering mainly around the cost of gas bubble generation and retention. Now the costs for flotation construction and O & M have been significantly reduced. The principles of dissolved air flotation process and operation are described in detail elsewhere (16-18).

The continuous pilot plant for demonstration of its technical feasibility is documented in a technical report (6). Table 1 presents typical operational conditions.

For the continuous pilot plant study, Lenox water was treated with desired amount of chemicals (aluminum sulfate, sodium aluminate, polyelectrolyte, bentonite clay and potassium permanganate) and fed to the dissolved air flotation unit (SUPRACELL) at controlled influent flow rates, varying from 9 to 12 gpm. Part of clarified water (about 30 pecent of influent flow) was regulated at 60 to 70 psig and used for pressurized flow supplying dissolved air to the flotation influent. The clarified flotation effluent was put through the single-media (11 inches of high grade silica sand) at 2.5 gpm/ft^2. The run was continued until a steady state was reached as determined by constant trubidity. The raw water, flotation effluent and filter effluent were periodically sampled and analyzed. Water and sludge flow rates were periodically monitored.

Table 2 indicates the pilot plant results from July to December 1981. Results are very promising. It is seen that the LIR pilot plant always met the U.S. Primary Drinking Water standards on turbidity.

Additional pilot plant investigations were also conducted by LIR using various synthetic raw waters containing 21.5 mg/l of trihalomethane presursor (humic acid), 10 mg/l of hevy metal (lead), or 2 mg/l of iron (ferrous ion). The humic acid dosed into the water gave a dark brown color. The treated filter effluent was crystal clear with a residual turbidity of 0.6 NTU. Residual humic acid, lead, iron and color in all experiments were all close to zero. It should be noted that alum (9 mg/l as Al_2O_3) alone is sufficient for removal of 21.5 mg/l of humic acid. 10 mg/l of lead can be removed with 20 mg/l of sodium aluminate at pH 10. 2 mg/l of ferrous iron can be converted to ferric iron within 3 min of bubbling at pH 9.5, then removed by filtration.

In another separate experiment, a synthetic raw water containing 910 mg/l of pure trihalomethane (chloroform) was bubbled with air at 213.22 SCFH/SF in a flotation unit. No chemical was added. It was found that within 3 minutes of flotation treatment, the trihalomethane concentration was reduced from 910 mg/l down to less than 3 mg/l as chloroform. More specifically, about 99.7 percent of chloroform was removed.

There is no need for KROFTA SANDFLOAT system to adopt prechlorination for algae removal and control because biological flocs have natural floating characteristics.

When necessary, potassium permanganate can be used for pre-disinfection or manganese removal.

In conclusion, KROFTA SANDFLOAT is not only economically affordable to small communities, but also technically feasible for removing target contaminants including turbidity, color, iron, manganese, trihalomethane, trihalomethane precursor, heavy metal, biological flocs, etc.

TABLE 1

OPERATIONAL PARAMETERS IN PILOT PLANT TESTING

Parameters	Operational Data
Raw Water Influent Flow (gpm)	9-12
Flocculation Tank Depths:	
Beginning (cm)	18-20
End (cm)	15-17
Flocculation Tank Baffle Openings:	
Short Channel (cm)	0.2
Long Channel (cm)	3.0
Flocculation Tank Retention time (min)	3.0
DAF Pressurized Recycle Flow (gpm)	3.7
DAF Dissolving Tube:	
Pressure (psi)	70
Bypass Valve Pressure (psi)	60
DAF Retention Time (min)	3.0
Sand Filter Maximum Flow (gpm/ft^2)	2.3
Sand Filter Minimum Flow (gpm/ft^2)	1.5
Sand Filter Support Screens (microns)	200
Depth of Filter Bed (inch)	11
Filter Backwash Rate (gpm/ft^2	15

TABLE 2

PILOT PLANT CLARIFICATION DATA AT LENOX INSTITUTE FOR RESEARCH INC.

DATE OF CONTINUOUS OPERATIONS OF PILOT PLANT (1)	RESERVOIR WATER, INFLUENT		PILOT PLANT CLARIFIED EFFLUENT (2)	
	COLOR (CU)	TURBIDITY (NTU)	COLOR (CU)	TURBIDITY (NTU)
7/31/81	10	3.1	0	0.25
8/12/81	10	3.5	0	0.45
9/10/81	5	22.0	0	0.25
9/14/81		5.5		0.3
9/16/81		4.5		0.2
9/22/81		5.5		0.5
9/24/81		5.5		0.52
9/30/81		22.0		0.6
10/1/81		6.7		0.3
11/2/81	8	7.8	2	0.6
11/5/81	10	6.7	1	0.26
11/6/81	10	6.8	2	0.6
11/9/81	10	6.1	3	0.4
11/11/81	10	6.3	4	0.7
11/18/81	7	5.7	5	0.6
11/19/81	10	6.2	4	0.58
12/3/81	10	6.4	3	0.37
12/10/81	4	6.2	1	0.5
12/11/81	6	5.9	3	0.4
12/12/81		6.5		1.0
12/16/81	6	7.8	3	0.5
12/18/81	5	5.6	3	0.52
12/21/81		5.7	2	0.8
12/28/81		3.5	2	0.7

NOTES:

1. The pilot plant is described fully in the Lenox Institute for Research Inc. Technical Report No. NTIS-PB82-118795 (Reference 7) except that the filter depth of high grade silica sand was only 11 inches.
2. The U.S. environmental Protection Agency Primary Drinking Water Standard: Turbidity, 1 NTU. the U.S. Environmental Protection Agency Secondary Drinking Water Standards: Turbidity, 1 NTU; Color, 15 CU.

IV. FULL SCALE LENOX WATER TREATMENT PLANT

4.1 AGREEMENT

The first full scale flotation plant with a capacity of 2 MGD was constructed for potable water treatment in the Great Britan in 1975 (19). Six years later, an agreement was made between the Town of Lenox and Krofta Engineering Corporation (KEC) for construction of the first full scale flotation plant in the United States. KEC accepted the commitment to build the Lenox Water Treatment Plant (KROFTA SANDFLOAT) for 1.0 MGD capacity (Note: Total Lenox water consumption), and to install it ahead of the existing Lenox chlorination station.

4.2 KROFTA SANDFLOAT

The SANDFLOAT is a clarifier designed for the removal of contaminates from potable raw water.

The SANDFLOAT incorporates: (a) Chemical flocculation; (b) Separation of chemical flocs by Dissolved Air Flotation (instead of conventional sedimentation); (c) Conventional Rapid Sandfiltration for the removal of residual floc. All three above operations are incorporated in one unit and this allows small size, efficient installations.

Figures 1-3 (L-883/5 through L-883/7) show the operation of the SANDFLOAT.

The raw water inlet is at the center and flows through a hydraulic rotary joint into the rapid mix section of the slowly moving carriage.

From the inlet distributor, the water enters the hydraulic flocculator for building up the floc. The flocculated water moves from the flocculator into the flotation tank with the same velocity as the carriage containing the flocculating tank, which is moving backwards simultaneously. The outgoing water velocity, compensated by the opposite velocity of the carriage, results in zero velocity. The water stands still for optimum clarification.

At the outlet of the flocculator water with microscopic air bubbles is added in order to raise the flocs to the surface.

The sludge accumulated on the surface is scooped off by a scoop and discharged into the center sludge collector.

A separate skimming device lifts the remaining sludge back into the main inlet distributor for additional sludge contact with the newly formed flocs.

The bottom of the SANDFLOAT is composed of multiple sandfiltering sections. A semicontinuous backwashing takes place by pumping clarified water below the sandfilter and sucking it out from the top with a separate pump. Backwash water is discharged into the main distribution inlet header for reprocessing.

The SANDFLOAT is completely automated with the level control operating the inlet flow valve. Backwashing is also automated by timer and clarified water level.

4.3 BUILDING CONSTRUCTION AND LAYOUT

The Town of Lenox has given KEC permission to construct the building of Lenox Water Treatment Plant, shown in Figure 4.

The treatment plant layout, shown in Figure 5, was prepared by J. F. Moynihan and Associates Inc., Lee, MA.

4.4 PROGRESS

In January 1982, Mr. Angelo Iantosca, Regional Environmental Engineer, Massachusetts Department of Environmental Quality Engineering (MA DEQE) issued a temporary permit to KEC for construction and operation of Lenox Water Treatment Plant (LWTP).

On March 22, 1982, KEC and LIR submit a report to the MA DEQE and the Tri-Town Health Department for establishment of a monitoring and control program for the LWTP. (20)

Presently, the building and sludge lagoon are constructed, the connecting water piping is made, the KROFTA SANDFLOAT is installed, the alum tanks are delivered, power connection is finished, heating system is in operation. It is expected that during April 1982, the plant will be put into operation.

KROFTA® Sandfloat

BIRD's VIEW

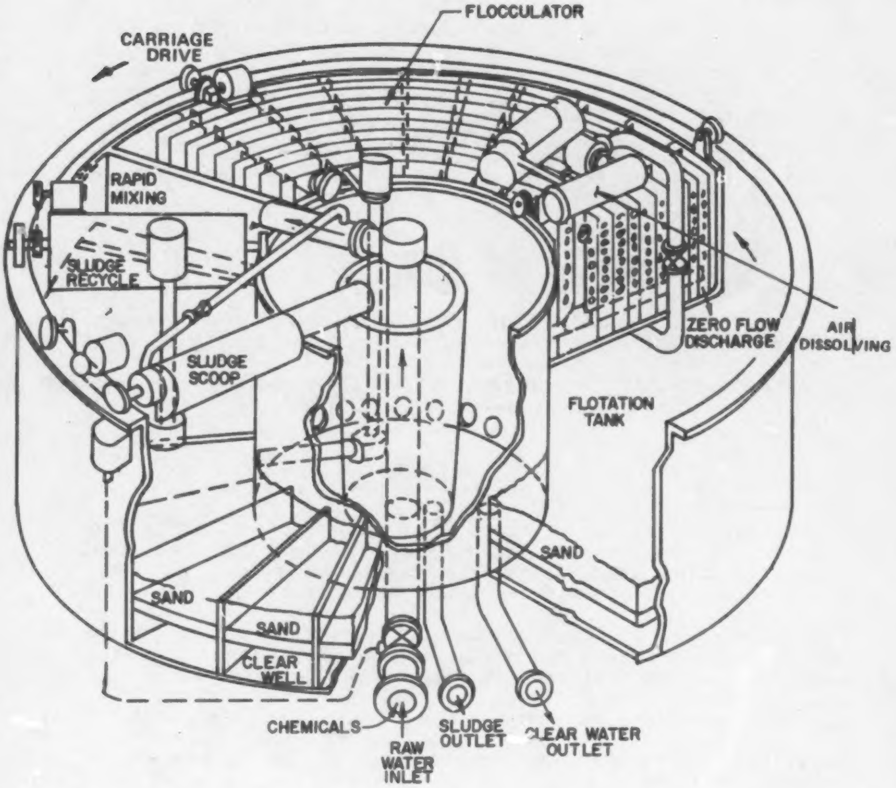

FLOCCULATOR
CARRIAGE DRIVE
RAPID MIXING
SLUDGE RECYCLE
SLUDGE SCOOP
ZERO FLOW DISCHARGE
AIR DISSOLVING
FLOTATION TANK
SAND
SAND
SAND
CLEAR WELL
CHEMICALS
RAW WATER INLET
SLUDGE OUTLET
CLEAR WATER OUTLET

Figure 1.

L – 883/5

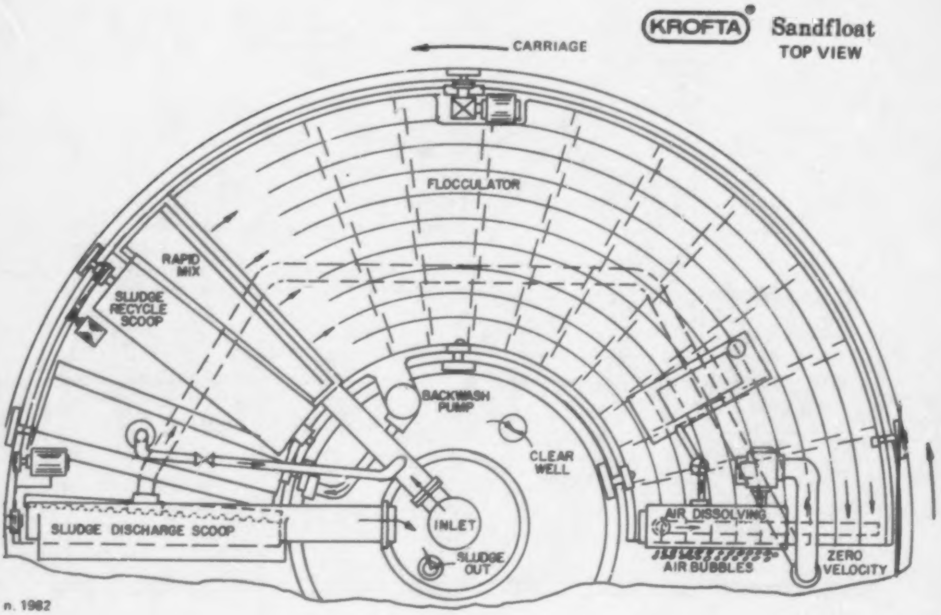

KROFTA
Sandfloat
TOP VIEW
CARRIAGE
FLOCCULATOR
RAPID MIX
SLUDGE RECYCLE SCOOP
BACKWASH PUMP
CLEAR WELL
SLUDGE DISCHARGE SCOOP
INLET
SLUDGE OUT
AIR DISSOLVING
AIR BUBBLES
ZERO VELOCITY
n. 1982

Figure 2.

L – 833·6

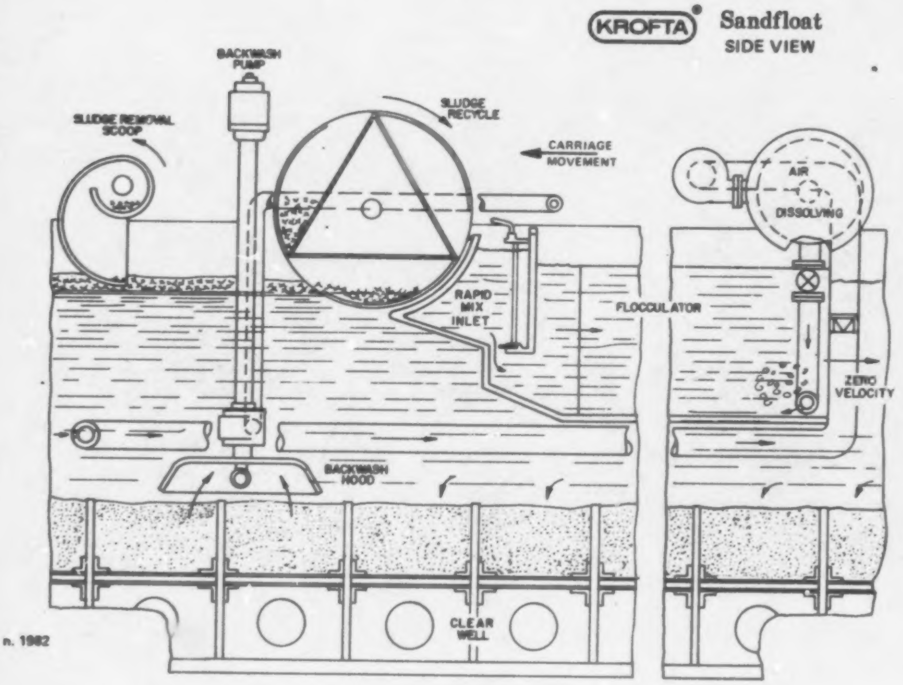

KROFTA
Sandfloat
SIDE VIEW
BACKWASH PUMP
SLUDGE REMOVAL SCOOP
SAND
SLUDGE RECYCLE
CARRIAGE MOVEMENT
AIR
DISSOLVING
RAPID MIX INLET
FLOCCULATOR
ZERO VELOCITY
BACKWASH HOOD
CLEAR WELL
n. 1982

Figure 3.

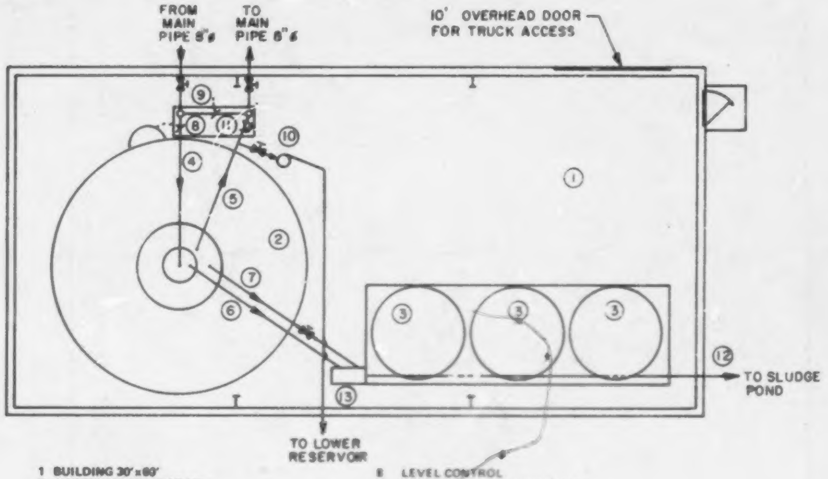
L – 833 7

KROFTA®

Sandfloat

BUILDING LAYOUT

LENOX WATER TREATMENT PLANT


FROM MAIN PIPE 6"⌀
TO MAIN PIPE 6"⌀
10' OVERHEAD DOOR FOR TRUCK ACCESS
TO SLUDGE POND
TO LOWER RESERVOIR
1
2
3
4
5
6
7
8
9
10
11
12
13

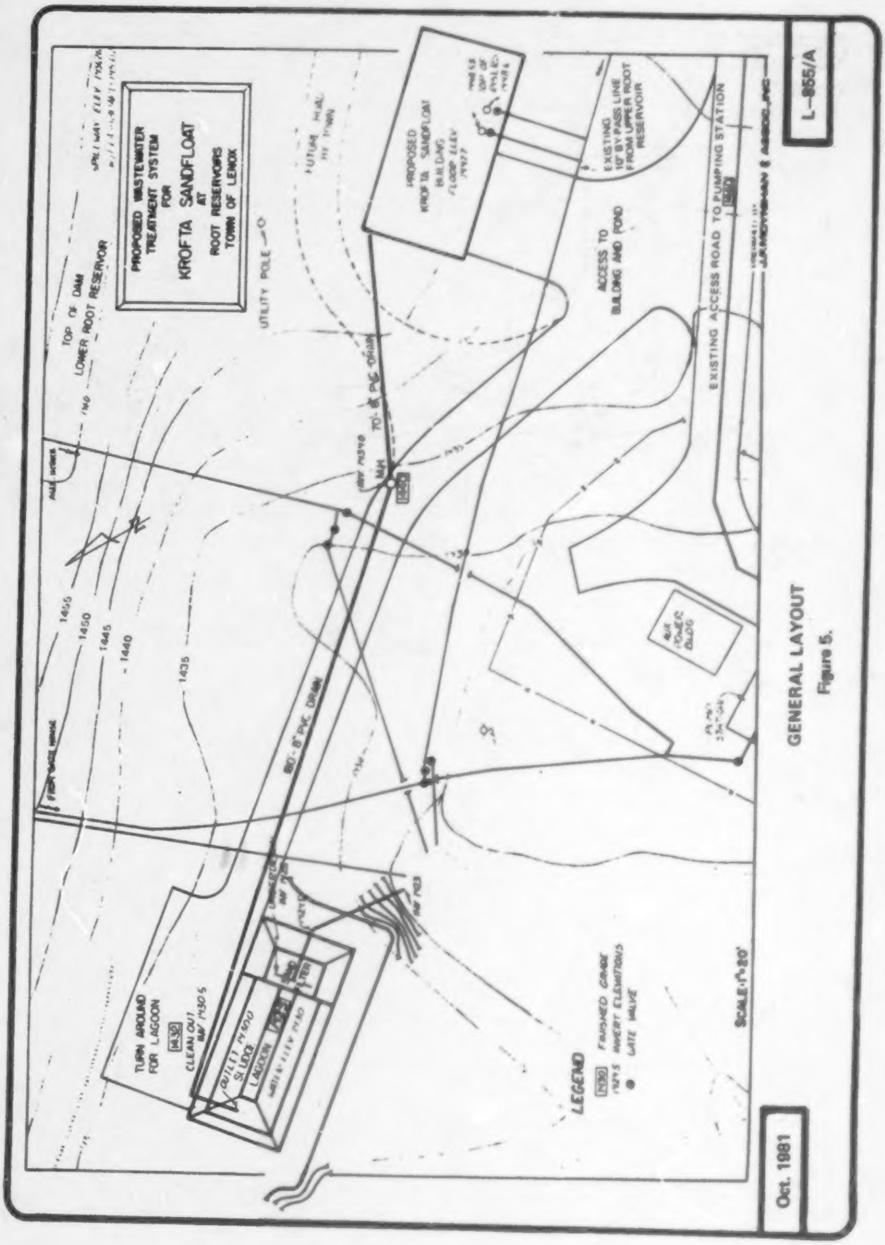
1 BUILDING 30'x60'
2 KROFTA SANDFLOAT 22'
3 ALUM TANKS 8'diam. (3)
4 UNCLARIFIED WATER INLET 6" diam.
5 CLARIFIED WATER OUTLET 6" diam.
6 SLUDGE OUTLET 4" diam.
7 DRAIN OUTLET 6" diam.

8 LEVEL CONTROL
9 PNEUMATIC VALVE for BYPASS
10 PUMP for WATER BYPASS through 6" diam. HOSE (above ground)
11 CHECK VALVE
12 DRAIN 8" diam.
13 DRAIN BASIN

Figure 4.

L – 855

FORM L 820H


PROPOSED WASTEWATER
TREATMENT SYSTEM
FOR
KROFTA SANDFLOAT
AT
ROOT RESERVOIRS
TOWN OF LENOX
TOP OF DAM
LOWER ROOT RESERVOIR
UTILITY POLE
FUTURE HEAL
PROPOSED
KROFTA SANDFLOAT
BUILDING
70'-8" PVC DRAIN
MH
180'-8" PVC DRAIN
1455
1450
1445
1440
1435
EXISTING
10" BY PASS LINE
FROM UPPER ROOT
RESERVOIR
ACCESS TO
BUILDING AND POND
EXISTING ACCESS ROAD TO PUMPING STATION
AIR POWER BLDG
PUMP STATION
TURN AROUND
FOR LAGOON
1432
CLEAN OUT
SLUDGE
LAGOON
LEGEND
1430 FINISHED GRADE
1429.5 INVERT ELEVATIONS
● GATE VALVE
SCALE: 1"=20'
L—855/A
Oct. 1981

GENERAL LAYOUT

Figure 5.

V. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This report concludes that a conventional water purification plant generally is not economically feasible for small communities due to the high construction cost and the low per capita income. The plant cost would become extremely high when toxic substances are to be removed by additional advanced granular activated carbon adsorption.

Krofta Engineering Corporation has developed a SANDFLOAT Plant based on the new flotation technology introduced to this country from Europe. This new water purification system is technically feasible for removal of turbidity, color, toxic organics, heavy metals, bacteria, and floating algae, and is also economically feasible for adoption by small systems.

The authorizing legislation for the Safe Drinking Water program (21) will expire in September 1982. As the members of American Clean Water Association and American Water Works Association, the authors share many concerns with the water supply industry about the need for future Safe Drinking Water Legislation.

The authors' major concern is the economic impact of the Safe Drinking Water Act on small water supplies. In addressing this issue, the U.S. Congress stated:

> "It is evident that what is a reasonable cost for a large metropolitan (or regional) public system may not be reasonable for a small system which serves relatively few users. The Committee believes, however, that the quality of the Nation's drinking water can only be upgraded if the systems which provide water to the public are organized so as to be most cost-effective. In general, this means larger systems are to be encourged and smaller systems discouraged. For this reason, the Committee intends that the Administrator's determination of what methods are generally available (taking cost into account) is to be based on what may reasonable be afforded by large metropolitan or regional public water systems".

The authors share the same view as Mr. Charles C. Johnson, Jr., the first Chairman of the National Drinking Water Advisory Council, that when health protection is required for consumers of drinking water, the size of the system is not the determining factor in satisfying that requirement.

While we agree with the Congress that the quality of the Nation's drinking water can only be upgraded if the systems which provide water to the public are organized so as to be most cost-effective, we do not agree that larger systems are to be encouraged and smaller systems discouraged.

Another intent of the Congress is presented below:

> "Section 1416 authorizes any State which has primary enforcement responsibility to exempt a public water system from any maximum contaminant level requirement or from any treatment technique requirement upon finding that the system is unable to comply due to compelling factors. These factors may include economic factors, such as the high cost of purchasing and constructing necessary equipment or facilities and the low per capita income and small number of residents in a community served by the system.
>
> "The authority to grant such exemptions is limited to public systems in operation on the effective date of the primary regulation".

It could be true in the past that there were compelling economic factors preventing small communities to enjoy potable and palatable water; thus there was a need for the authority to grant special exemptions from meeting the U.S. Primary Drinking Water Standards for relief of small systems. Now an affordable water purification system, KROFTA SANDFLOAT, has finally been developed for both small and large systems (17) with capacities ranging from 1 MGD to 100 MGD.

We recommend that the dissolved air flotation be listed as one of the known and feasible potable water treatment techniques for removal of turbidity, color, iron, manganese, heavy metal, trihalomethane, trihalomethane prescursor, and bacteria, meeting the requirement of Section 1412 concerning maximum feasible protection of the public health. We do not feel there is a need to modify the Safe Drinking Water Act soly for relief of small systems. We further recommend that the administrator be given the authority to require the use of at least one of the feasible treatment techniques accepted by the Federal Government.

REFERENCES

1. Bellar, T. A., J. J. Lichtenberg and R. C. Kroner, "The Occurrence of Organohalides in Chlorinated Drinking Water", Journal American Water Works Association, Vol. 66, p. 703-706, Dec. 1974.

2. Rook, J. J., "Formation of Haloforms During Chlorination of Natural Water", Water Treatment and Examination, Vol. 23, Part 2, p. 234:243, 1974.

3. Symons, J. M., A. A. Stevens, R. M. Clark, E. E. Goldreich, O. T. Love, and J. DeMarco, "Removing Trihalomethanes From Drinking Water", Water Engineering and Management, p. 50-64, July 1981.

4. Crutsinger, M., "Drinking Water, Cancer and You", the Journal News, West Nyack, NY., p. A2 and p. A16, Dec. 18, 1980.

5. Federal Register, 44, no. 231, 68624-68707, Nov. 29, 1979.

6. Federal Register, 45, No. 49, 15542-15547, March 11, 1980

7. Krofta, M., L. K. Wang, D. Barris and J. Janas, "Treatment of Pittsfield Raw Water for Drinking Water Production by Innovative Process Systems" U.S. Dept. of Commerce, National Technical Information Sevice, Springfield, VA., Report No. PB82-118795, 87 p., Feb. 1981.

8. Krofta, M. and L. K. Wang, "Potable Water Pretreatment for Turbidity and Color Removal by Dissolved Air Flotation and Filtration for the Town of Lenox, Massachusetts", U.S. Dept. of Commerce, National Technical Information Service, Springfield, VA., Oct. 1981.

9. Krofta, M. and L. K. Wang, "Report on Projected Water Treatment Plant for the City of Pittsfield, Massachusetts with the Application of Flotation Technology' U.S. Dept. of Commerce, National Technical Information Service, Springfield, VA. Report No. PB82-118779, January 1982.

10. Hyde, R. A., D. G. Miller, R. F. Packham and W. N. Richards, "Water Clarification by Flotation", Journal American Water Works Association, P. 369-374, July 1977.

11. Wang, L. K., "Monitoring and Analysis of Potable Water for the City of Pittsfield, Massachusetts", U.S. Dept. of Commerce, National Technical Information Service, Springfield, VA., 53 p., Feb. 1982.

12. Pappachen, A., L. Kurylko and L. K. Wang, "Development of A New Water Treatment Process for Decreasing the Potential for Trihalomethane Formation", U.S. Department of Commerce, National Technical Information Service, Springfield, VA., Technical Report No. PB81-202541, 85 pages, May 1981.

13. U. S. Environmental Protection Agency, "Estimating Water Treatment Costs, Volume 1", Report No. EPA 600/2 79 162A; U. S. Department of Commerce, National Technical Information Service, Springfield, VA, 204 p., August 1979.

14. U.S. Environmental Protection Agency, "Estimating Water Treatment Costs, Volume 2", Report No. EPA-600/2-79-162B; U.S. Dept. of Commerce, National Technical Informtion Service, Springfield; VA. 524 p., August 1979.

15. U.S. Environmental Protection Agency, "Estimating Water Treatment Costs, Volume 3", Report No. EPA-600/2-79-162C; U.S. Dept. of Commerce, National Technical Information Service, Springfield, VA., August 1979.

16. Krofta, M. and L. K. Wang, "Flotation and Related Adsorptive Bubble Separation Processes", Lenox Institute for Research Inc., Technical Report No. LIR/06-81/1, 150 p., June 1981.

17. Krofta, M. and L. K. Wang, "Potable Water Treatment by Dissolved Air Flotation and Filtration", Lenox Institute for Research Inc., Technical Report No. LIR/02-82/2, 30 p., February 1982. Technical paper accepted for publication by Journal American Water Works Association.

18. Krofta, M., D. Guss, and L. K. Wang, "Improved Biological Treatment with a Secondary Flotation Clarifier", Lenox Institute for Research Inc. Technical Report No. LIR/09-81/1, 61 p. Sept. 1981. Technical Paper to be presented at the 1982 National American Institute of Chemicals Meeting, August 29-Sept. 1, 1982, Cleveland, Ohio.

19. "First Full Scale Flotation Plant in U.K.", Water and Waste Treatment, November 1975 (England)

20. Krofta, M. and L. K. Wang, "Monitoring and Control of Lenox Water Treatment Plant, Lenox, Massachusetts", Lenox Institute for Research Inc., Technical Report No. LIR/03-82/2, 17 p. March 1982.

21. U.S. Congress, House of Representatives, Report No. 93-1185, Legislative History, Safe Drinking Water Act, 1974/

22. Hopkins, E., "Comments of the Clean Water Action Project", American Clean Water Association, Washington, D.C., Submitted to the U.S. EPA, Office of Drinking Water, 8 p., February 1982.

John S. MacNeill, Jr., P.C.
CONSULTING ENGINEERS, SURVEYORS, PLANNERS
A Professional Corporation

☐ 74 NORTH WEST STREET
HOMER, NEW YORK 13077
(607) 749-2644

571 MAIN STREET ☐
ONEONTA, NEW YORK 13820
(607) 432-7467

Testimony of
Arthur W. MacNeill

Project Engineer
John S. MacNeill, Jr., P.C.

on

Safe Drinking Water Act

before

Senate Committee on Environment and Public Works

Toxic Substances and Environmental Oversight

Slade Gorton, Chairman

29 March 1982

BUILDING AND UTILITY DESIGN • WASTE AND NATURAL RESOURCE MANAGEMENT • LOCATION AND SITE ANALYSIS

DESCRIPTION
OF AN
ECONOMIC AND TECHNICAL FEASIBILITY
FOR
SMALL COMMUNITY POTABLE WATER SUPPLY

COOPERATIVE AGREEMENT CS809411010
BETWEEN
THE UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY

AND

THE VILLAGE OF CAYUGA, CAYUGA COUNTY, N.Y.

John S. MacNeill, Jr., P.C. in association with Culligan U.S.A. has researched and developed a water filtration system for the Village of Cayuga, N.Y. to reduce cost of filtration from turbid surface impoundment and to meet standards of New York State Department of Health and the United States Environmental Protection Agency.

JOHN S. MacNEILL, JR., P.C.

CULLIGAN U.S.A.

INTRODUCTION

Small communities throughout the United States that utilize surface water impoundments as a source of potable water supply have found it difficult to conform with the requirements of the Federal regulations covering turbidity and microscopies in public water supplies.

Currently approved equipment capable of removing turbidity to acceptable levels have a number of disadvantages as follows:

1. Excessive equipment area requirements requiring construction of new buildings.
2. High chemical or filter media replacement costs.
3. High equipment and installation costs.
4. Extensive operator time requirements.

All of the above conditions cause the approved equipment to place an economically nonfeasible burden on particularly small communities.

Recognizing this problem, The Honorable Gary Lee, Congressman representing the 33rd Congressional District of New York State sponsored a resolution directing EPA to participate in the research and development of alternate technology to assist small communities in identifying suitable equipment that is economically affordable by small communities.

The primary objective is the development of a suitably treated potable water supply that meets the criteria of NYSDOH. Currently, the public water system in the Village of Cayuga is subjected to high turbidity breakthrough with the existing rapid sand filter. This turbidity consists of amorphus detritus, silt fines, and organic residue from storm water runoff and/or wave action occuring in the north end of Cayuga Lake. The depth of the lake offshore at the Village of Cayuga varies from 3 to 5 feet allowing wave action to churn the bottom. The churning prevents the clarification that is achieved in the deeper portions of the lake to the south.

The secondary objective would be to demonstrate the economic feasibility of the proposed installation in view of the limited budget and subsequent limited "Operator Time" available in small communities such as Cayuga.

LOCATION OF RESEARCH PROJECT

The Village of Cayuga, County of Cayuga, New York State has a current population of 603 (1980 preliminary census). In addition to the Village population, the water system supplies an adjacent town water district that has a total of 92 residential connections.

In 1935, the Village of Cayuga installed a water treatment plant, to utilize Cayuga Lake as a potable water supply, consisting of an intake structure about 300 ft. off shore and a low head pump to transfer water through an aerator. From the aerator chamber, the water flows by gravity through a settling tank, then to a rapid sand filter. The filtered water is then chlorinated and discharged to a wet well below grade. The backwash from the sand filter is discharged to the lake. High pressure injection pumps deliver water to the system at the rate of 150 GPM. This system is not capable of meeting current potable water supply quality requirements.

The Village of Cayuga is an ideal location for this research project. Turbidity levels in the raw waters of Cayuga Lake at this location vary from lows of ± 1 NTU to highs in excess of 100 NTU. Changes from minimum to maximum levels can occur in less than 2 hours. The raw water turbidity consists of fine grit, fine silt, organic debris, and detritus. During warmer months algae blooms have contributed to turbidity also. A filtration plant capable of year round treatment at Cayuga will be applicable in the majority of turbidity related problems of other communities. Another seasonal occurrence in the area is the presence of water fowl. During the early spring and again in the late fall the waters offshore along the Village of Cayuga are inhabited by migratory water fowl in vast numbers. The impact of these visitations are unknown at this time, but will be documented through the research period.

As part of the study the treatment and disposal of backwash waters from the proposed filtration system have to be identified. A State Pollution Discharge Elimination System (SPDES) Permit will be applied for to allow treated backwash effluent to be discharged to Cayuga Lake. This Permit will be issued by the New York State Department of Environmental Conservation (NYSDEC) and requires limitations and monitoring of pH aluminum, total solids, suspended solids, and quantity of flow.

STATEMENT OF PROBLEM

The turbidity conditions that exist at the Village of Cayuga in Cayuga Lake are caused by a number of natural and unnatural activities in the area.

1. The increased use of fertilizers by the agricultural community surrounding Cayuga Lake, coupled with storm runoff, contributes to turbidity and algae blooms in the lake.

2. High west to southwest winds cause wave action to churn up the shallow areas at the north end of Cayuga Lake.

3. Seasonally the State of New York equalizes the water levels within the Barge Canal system. This can cause a reverse flow at the north end of Cayuga Lake which tends to scour the bottom causing turbidity. This usually occurs during the early spring of the year. Also channel activities of the Barge Canal system, which runs just offshore at Cayuga, from time to time cause turbidity.

These conditions parallel other small community problems. Throughout the United States small communities are in violation of turbidity because:

1. Upland small surface reservoirs and lakes that are subjected to turbidity as a result of mountainous terrain causing high scouring velocities of runoff waters.

2. Decomposition of organic matter in forested areas and agricultural areas, which by surface runoff, become deposited in reservoirs.

3. Shallow reservoirs are churned up by wave action.

4. Phosphorous and nitrogen from decomposition of organic matter or agricultural activities cause algae blooms resulting in taste, odor, and turbidity conditions, particularly during the warmer months.

5. Spring melt of accumulated winter snows cause high levels of solids to be transported to surface reservoirs, particularly in areas where frozen ground prevents the percolation of these waters at the surface.

Therefore, a research project located at Cayuga, N. Y. will generate data that will be useful to a large number of small communities throughout the United States that are seeking economically feasible methods to meet drinking water standards relating to turbidity, microscopics, and algae.

BACKGROUND AND PROPOSED EQUIPMENT

I. General

Types of equipment which have demonstrated the capability of removing turbidity from potable water supplies in compliance with requirements are,

1. Rapid sand type filters with mixed media filter beds. This type has excessive backwash rates generating large volumes of water which require treatment on site or transfer to publicly owned sewage treatment works. These units require considerably more area for installation making it almost impossible to install them in existing structures. This necessitates building construction as well as relatively high equipment costs. These units have limited capabilities with regard to removal of organics and have basically the same chemical usage characteristics as the proposed filtration system.

2. Diatomaceous earth filters: Filters utilizing diatomaceous earth (DE) have been approved in New York State at rates of a maximum of 1 GPM/foot square. The cost of DE during extreme turbidity conditions tends to be quite high, as the material is wasted during backwash. The proposed equipment does not waste media during backwash.

Carbon replacement will be necessary with the proposed equipment but this cost is estimated to be $270 per year with a replacement interval of ± 3 years.

The filter rate of proposed equipment is 7 GPM per square foot for preliminary treatment equipment and 5 GPM per square foot for the final carbon filter.

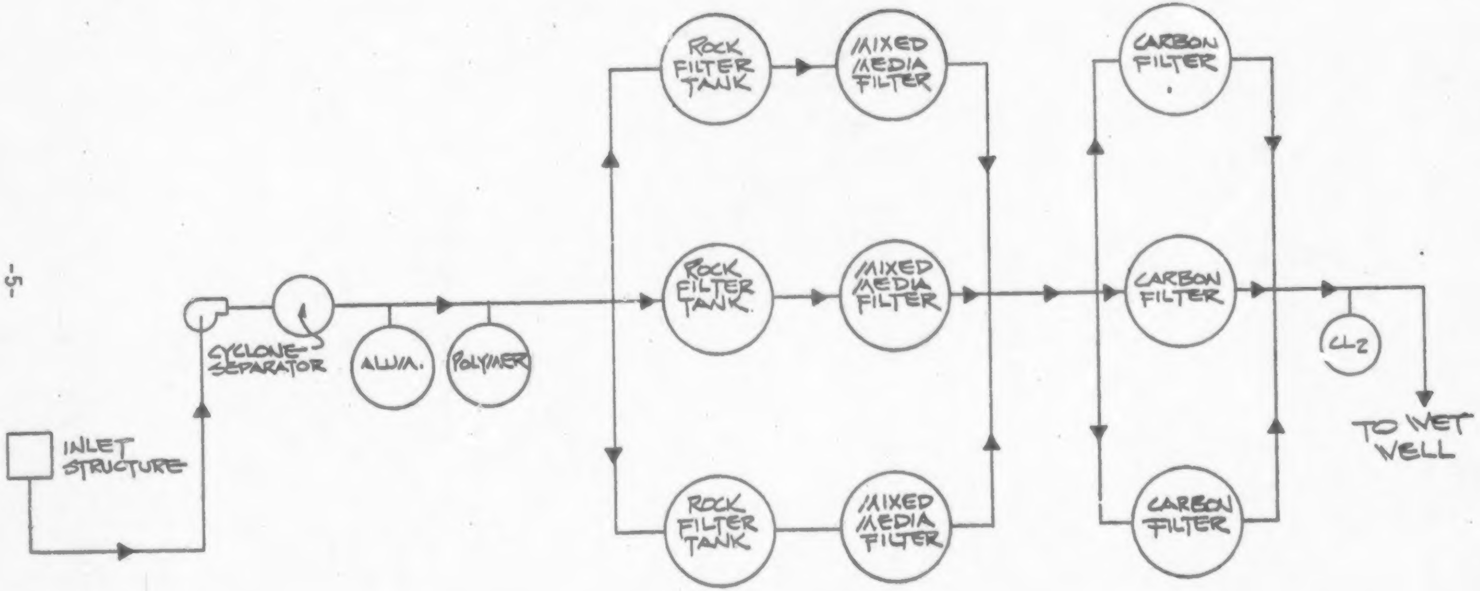
II. Specific:

The proposed filtration system consists of five steps or units as follows: (See attached filtration system schematic);

1. The raw water from Cayuga Lake will [illegible]rst pumped through a cyclone style separator. This unit will [illegible]rate the heavier gross solids from the raw water stream. Sm[illegible] pilot studies on site at the Village of Cayuga Water Treat[illegible] have indicated that removal of grit, and particles in excess of 70 microns will be removed by this unit. There will be a small volume blowdown from this unit that has a total suspended solids concentration of ± 700 MG/L. Turbidity reduction through this unit is negligible and under certain conditions it tends to rise slightly.

PROPOSED FILTRATION SYSTEM SCHEMATIC

VILLAGE OF CAYUGA, N.Y.


INLET STRUCTURE
CYCLONE SEPARATOR
ALUM.
POLYMER
ROCK FILTER TANK
ROCK FILTER TANK
ROCK FILTER TANK
MIXED MEDIA FILTER
MIXED MEDIA FILTER
MIXED MEDIA FILTER
CARBON FILTER
CARBON FILTER
CARBON FILTER
CL-2
TO WET WELL

2. Chemical Feed: Downstream of the separator, alum is first injected into the stream, and this is followed by the injection of Polymer. The mix rate of the solutions will be as follows:

Alum - 1 lb. alum dissolved in ten gallons of water

Polymer - 12 fluid oz. Polymer diluted to ten gallons of water

Small scale pilot work has shown that there is a minimum concentration of alum and polymer required in the raw water for low turbidity levels. Also, data has indicated that the increased demand for alum and polymer is not linear to increased turbidity in NTU's. To reduce operator on site requirements, it will be necessary to install a surface scatter type turbidity measuring device that has a capability of detecting turbidity concentrations over a range of 1 NTU to 100 NTU. A proportional signal from this unit will be fed into an analog controller which will automatically proportion chemical feed as required. The proportional signal from the turbidity measuring device will also be fed to a strip chart which will continuously record the turbidity of the incoming raw water.

3. Primary Clarification: The first of three pressure vessels in each train will be filled with fragmented and graded rock. This unit acts as a flocculator and primary filter for the chemically treated raw water. The turbidity reduction through this unit based on small scale pilot study will be about 50% of the raw water concentration. The feed rate through this unit will be 7 GPM per foot square.

4. Primary Filtration: The second of three pressure vessels in each train will be a mixed media filter. The feed starting through a coarse media and finally passing through a fine media. The turbidity reduction of waters leaving this vessel will be 99.5% of the raw water concentrations. The feed rate through this unit will be 7 GPM per foot square.

5. Final Filter: The third of three pressure vessels in each train will be a carbon filter with a garnet bed to contain the carbon. The carbon used for this filter is a hard finish carbon to prevent dusting or loss of minute carbon particles in the finished water. The turbidity reductions of the waters leaving this unit will be about 99.7% of the raw water concentration. The feed rate through this unit will be 5 GPM per foot square. The waters leaving this unit will be chlorinated prior to discharge into the wet (clear) well in the existing building.

The percent reduction of turbidity concentrations stated above are during periods of high turbidity in the raw water waters. During small scale pilot study turbidity varied from lows of 1.8 NTU to highs of greater than 100 NTU; increases from 20 NTU to greater than 100 NTU in 2 to 3 hours.

VILLAGE WATER USER IMPACT

The current 1980-81 operating year budget of the Village of Cayuga Water Dept. is as follows:

Type of Cost	Cost Per Year
Operator	$ 5,842
Utilities (Electric & Gas)	7,628
Chemical (Chlorine)	800
Maintenance Equipment & Supplies	1,625
Miscellaneous Expenses	3,210
Total Budgeted Cost	$19,105

This represents an annual average user cost as follows:

Type of User	Cost Per Year Per Connection
Village residence	$ 60.00
Village Industry (Beacon Milling)	3,313.00
Town Water District #3	143.00
Residential Out of Village Users	120.00

Based on data acquired from small scale pilot studies of the proposed Culligan equipment, the following is an estimated budget for one year's operation of the Water Dept.:

Type of Cost	Cost Per Year
Operator	$ 8,500
Utilities (Electric & Gas)	7,200
Chemicals (Chlorine, Alum, Polymer and NaOH)	4,560
Maintenance Equip. & Supplies	2,000
Carbon replacement	270
Misc. expenses	3,730
Indebtedness (40 Yr.)	5,828
Total Estimated Yearly Budget	$32,088

This represents an annual user cost as follows:

Type of User	Cost Per Year Per Connection
Village Residence	$ 100.00
Village Industry (Beacon Milling)	5,564.00
Town Water District #3	240.00
Residential Out of Village Users	201.00

Water Conservation Measures.

The Village of Cayuga is currently improving the water storage capacity for fire flow and installing a telemetry control system for the control of the treated water injection pumps. This will reduce water consumption an estimated 20% in the Village as the current manual method results in sporadic overflow of the storage tank.

The Village of Cayuga has an ongoing search and location program for leaks within the system. It is estimated that an additional 20% of water use can be saved through the identification and repair of distribution system leaks.

Upon completion of these above conservation programs, the budget can be reduced as estimated below:

Type of Cost	Cost Per Year
Operator	$ 8,500
Utilities (Electric & Gas)	5,000
Chemicals (Chlorine, Alum, Polymer & NaOH)	2,736
Maintenance Equip. & Supplies	2,000
Carbon Replacement	270
Misc. Expenses	3,770
Indebtedness (40 yr.)	5,828
Total Estimated Budget After Water Conservation	$28,064

This presents an average annual user cost as follows:

Type of User	Cost Per Year Per Connection
Village Residence	$ 88.00
Village Industry (Beacon Milling)	4,867.00
Town Water District #3	210.00
Residential Out of Village Users	176.00

The Village of Cayuga Board of Trustees considers these estimated costs are reasonable for furnishing a good potable water supply which will satisfy the requirements of the New York State Dept. of Health and the United States Environmental Protection Agency.

Source of financing for current filtration system installation at the Village of Cayuga, New York.

United States Environmental Protection Agency	$210,000
Municipal Bonds (Village of Cayuga)	108,000
TOTAL PROJECT COST	$318,000

Estimated project costs using a filtration system currently approved by regulatory agencies. (NYSDOH) $485,000

Village of Cayuga Historical Budget Information:

Year	Billing Rate	Water Dept. Budget	Average Percent Increase Per Year
1935	$4 per quarter	$ 4,882	-
1950	$5.50 per 10,000 gallons	$ 8,682	5.2
1960	$5.50 per 10,000 gallons	$ 8,975	1.5
1970	$5.50 per 10,000 gallons	$10,000	.025
1980	$7.80 per 7,000 gallons	$19,104	9.1
1982	$13.20 per 7,000 gallons	$32,088	68

Projected Budget for Installation of Filtration System Without Federal Assistance:

1982	$16.10 per 7,000 gallons	$39,400	106

If approved Non-innovative technology filtration system had been used, the projected budget without Federal assistance is estimated as follows:

1982	$21.60 per 7,000 gallons	$52,500	175

Average Cost of Water Consumed Per Person Per Year at Cayuga, New York

1980 Budget	$21.00
1982 Budget	$35.00
1982 Budget without Federal Assistance using Proposed Equipment	$43.00
1982 Budget without Federal Assistance using Currently Approved Equipment by NYSDOH	$57.30

Respectfully submitted,

Arthur W. MacNeill
Project Engineer

BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Administrator Environmental Protection Agency

States' Compliance Lacking In Meeting Safe Drinking Water Regulations

The Safe Drinking Water Act of 1974 represents the first national commitment to provide safe drinking water. Yet, during fiscal year 1980, over 146,000 violations of the drinking water regulations were recorded against community water systems. Furthermore, EPA estimates that 13,600 community water systems cannot, without improving their facilities, meet the Federal drinking water quality standards.

The lack of full-time and properly trained water system operators, operator apathy toward the Federal requirements, and insufficient State resources--both funding and personnel--are reasons for the significant noncompliance.

To more effectively use limited State resources and provide for consistent enforcement against noncomplying water systems, GAO recommends that EPA establish specific guidelines the States can use when developing their enforcement strategies.

CED-82-43
MARCH 3, 1982

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

B-206389

The Honorable Anne M. Gorsuch
Administrator
Environmental Protection Agency

Dear Ms. Gorsuch:

We reviewed the Safe Drinking Water Program to determine whether the Environmental Protection Agency (EPA) and primacy States--those States granted authority by the Administrator, EPA, to operate the Federal drinking water program--have effectively implemented the provisions of the act. Our review showed that

--many small community public water system supplies are not meeting the drinking water quality standards and are not being tested as required by Federal regulations and

--as defined in the act, the effectiveness of the public notification process in informing drinking water users of violations is questionable.

During fiscal year 1980, over 146,000 violations of the drinking water regulations were recorded against 28,000 of the 65,000 community water systems. EPA estimates 13,600 community water systems cannot, without improving their facilities, meet one or more of the drinking water quality standards.

We believe that a combination of factors including the lack of full-time and properly trained water system operators, water system operator apathy, failure of States to perform water sampling activities, and insufficient State resources--funds and personnel--are the primary factors causing these problems.

This report contains a recommendation to you on page 12. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are providing copies of this report to the Chairmen, House Committee on Energy and Commerce and the Senate Committee on Environment and Public Works; other congressional committees and individual Members of Congress; the Director, Office of Management and Budget; and your Director, Office of Drinking Water.

Sincerely yours,

Henry Eschwege

Henry Eschwege
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE ADMINISTRATOR,
ENVIRONMENTAL PROTECTION
AGENCY

STATES' COMPLIANCE LACKING IN MEETING SAFE DRINKING WATER REGULATIONS

DIGEST

The National Interim Primary Drinking Water Regulations established drinking water quality standards and water testing requirements to ensure the quality of drinking water provided by the Nation's 215,000 public water systems. However, compliance with these regulations by the Nation's public water systems, in literally thousands of cases, appears to be the exception rather than the norm. Environmental Protection Agency (EPA) statistics for fiscal year 1980, show that over 146,000 violations for either failing to test or for not meeting the drinking water quality standards were recorded against 28,000 of the 65,000 community water systems in this country. (EPA does not compile statistics for the 150,000 noncommunity water systems.) GAO's detailed review of 140 community and 70 noncommunity water systems support the national statistics.

GAO reviewed the Safe Drinking Water Program to determine how effectively EPA and primacy States--those granted authority by the Administrator, EPA, to operate the program--have implemented the provisions of the act.

NATIONAL COMMITMENT TO PROTECT DRINKING WATER

Since the early 1950's, the number of reported waterborne disease outbreaks has increased gradually. The latest statistics available indicate that from 1961 through 1978 drinking water caused 407 outbreaks of disease or poisoning resulting in 101,243 recorded illnesses and at least 22 deaths. Some water supply experts believe that 10 times as many outbreaks actually occur but go unreported.

In December 1974, the Congress passed the Safe Drinking Water Act to insure that public water supply systems throughout the Nation meet minimum national standards for the protection of public health. The act directed the Administrator, EPA, to establish primary drinking water regulations, setting national health standards for drinking water, and gave the States primary responsibility for enforcing the regulations and supervising the approximately 215,000 public water systems in this country. (See p. 1.)

EPA, in December 1975, issued the National Interim Primary Drinking Water Regulations, setting drinking water standards for coliform bacteria, turbidity (cloudiness), and inorganic and organic chemicals. In July 1976, the regulations were amended to establish a standard for radionuclides. The regulations also prescribed how often drinking water supplies must be tested for each contaminant and steps water owners and/or operators must take to notify EPA or the States and water users each time a standard is exceeded or required testing is not performed. (See p. 2.)

USERS NOTIFIED OF FEW VIOLATIONS

Of the 146,000 nationwide recorded violations, evidence indicates that public notification--required for each violation--was made in only 16,000 cases. Of the 701 violations GAO identified, public notification took place in only 63 cases. (See p. 6.)

GAO's review did not identify any instances where either the violation of a contaminant standard or the failure to test a water source has resulted in a waterborne disease outbreak, a serious illness, or death to any of the water systems' users. However, the potential for such occurrences does exist.

LIMITED RESOURCES IMPACT ON ENFORCEMENT ACTIONS

EPA and State drinking water program officials cited several reasons for the significant number of violations. These reasons included the lack of full-time and properly trained operators, operator apathy toward the Federal requirements, and insufficient resources--both funding and personnel--to meet the Federal requirements. GAO's findings generally support these reasons. (See pp. 6 to 8.)

While the act provided an enforcement mechanism to ensure compliance, it was the intent of the Congress that such compliance would be the primary responsibility of the States, the localities, and the Nation's water systems. However, this has not occurred. Again, EPA's own statistics project that 13,600 public water systems cannot, without improving their facilities, meet one or more of the water quality standards. Thousands of other systems are also not complying by failing to (1) submit required monitoring reports, (2) properly test their water sources, and (3) notify the public.

GAO found that the enforcement actions in the three EPA regional offices and the seven States included in its review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and were not as timely as they could or should have been. (See p. 9.)

EPA's first concerted effort to deal with the mounting noncompliance problem was in June 1980, when it issued its policy for compliance of small public drinking water supply systems. The small system compliance strategy required that, beginning in fiscal year 1981, each State receiving a Federal grant under the drinking water program would include in its annual program plan, which accompanies the grant application, an enforcement criteria that would guide the State's use of its enforcement resources. According to the strategy, the States are responsible for consistently applying their enforcement resources to identify priority violators. (See p. 10.)

The program was not fully implemented at the time of GAO's review and therefore, its effectiveness was not evaluated. However, GAO analyzed program plans approved by EPA for the five primacy States included in the review and found several inconsistencies. While the strategy is a step in the right direction, GAO believes that EPA needs to further define those specific factors that the States must consider when ranking water systems for enforcement action.

In addition to implementing the small water system compliance strategy, EPA published an issue paper in December 1981, requesting public comment on the act's public notification requirements and several other aspects of the drinking water program. EPA anticipates that the input it receives will help it formulate proposed amendments to the act or, as a minimum, to the Federal drinking water regulations on the public notification system. EPA held public hearings on the issue paper in February 1982, and a summary of the comments along with recommendations are to be forwarded to the National Drinking Water Advisory Council in March 1982. Following the Council's review, the recommendations are to be forwarded to the Administrator, EPA, for action. (See p. 17.)

GAO believes that EPA's current action in studying the program--both its pros and cons--is a step in the right direction. If properly and effectively carried forward, this effort should result in actions designed to improve the program.

RECOMMENDATION

GAO recommends that the Administrator, EPA, direct the Office of Drinking Water to develop and implement specific guidelines the States can use when developing the enforcement strategy sections of their State plans which accompany the annual drinking water program grant application. These guidelines will help States to more effectively use their limited resources and provide for consistent application of enforcement actions. (See p. 12.)

AGENCY COMMENTS

Although written comments were not obtained, GAO discussed the report with the Director, Office of Drinking Water and, where appropriate, the Director's comments were included. The Director generally agreed with GAO's conclusions and stated that action would be taken to implement the recommendation. (See p. 12.)

Contents

Page

DIGEST i

CHAPTER

1 INTRODUCTION 1
- The Federal program to insure safe drinking water 1
- The drinking water regulations 2
- How a State assumes primacy 2
- Objectives, scope, and methodology 3

2 WATER SYSTEM SUPPLIERS NOT MEETING FEDERAL TESTING REQUIREMENTS 5
- Water testing requirements 5
- Results of testing activities 6
- Why water systems are not complying with EPA testing requirements 6
- Some States are not doing the required testing 7
- Limited actions taken by EPA and the States to ensure compliance with Federal requirements 9
- EPA's effort to deal with noncompliance 10
- Conclusions 11
- Recommendation 12
- Agency comments 12

3 THE PUBLIC NOTIFICATION SYSTEM'S EFFECTIVENESS IS QUESTIONABLE 13
- Congressional intent for public notification 13
- EPA's implementing regulations to carryout the public notification system 14
- Why isn't the public notification system working? 14
- Actions EPA is taking on public notification system 17
- Conclusions 18

APPENDIX

I State primacy requirements 19

II Sampled community systems failing to comply with Federal monitoring requirements, by State and contaminant 21

ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office

GLOSSARY

Coliform bacteria	Bacteria present in the digestive tract of humans and warmblooded animals which indicates that fecal matter is present in drinking water.
Exemption	Waiver granted by EPA or a State to a water system unable to comply with a water quality standard for such reasons as economic constraints. The act requires systems receiving exemptions to comply with the water quality standards by January 1, 1984 (or January 1, 1986, for systems forming a regional water works.)
Inorganic chemicals	Elements of mineral origin or resulting from human activities, such as the lead used in soldering copper water pipes. Inorganic chemicals subject to the drinking water regulations are arsenic, barium, cadmium, chromium, fluoride, lead, mercury, nitrate, selenium, and silver.
Organic chemicals	Man-made compounds used to manufacture pesticides and herbicides--Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, and 2,4,5-TP (Silvex). Also includes trihalomethanes--carcinogenic by-products formed when chlorine, added to the water as a disinfectant, interacts with natural organic matter in the water.
Radionuclides	Man-made and natural radioactive materials. Natural radioactive materials are Gross Alpha Particles, Radium 226, and Radium 228. The man-made materials include Tritium, Strontium 89 and 90, Iodine-131, Cessium 134, Gross Beta Particles, and several hundred other isotopes resulting from nuclear activities.
Turbidity	Cloudiness in water caused by minute suspended particles in the water.

Variance	Waiver granted by EPA or a State in cases where a water system cannot, even using the latest treatment technique, achieve a drinking water quality standard because the quality of the water source is too poor. Variances have no statutory compliance dates.

CHAPTER 1

INTRODUCTION

Americans generally assume that their drinking water is safe. In many respects this is a valid assumption; however, recent indications are that the quality of our drinking water may be deteriorating. Since the early 1950's, the number of reported waterborne disease outbreaks has been increasing gradually. The latest statistics available indicate that from 1961 through 1978 drinking water caused 407 outbreaks of disease or poisoning, resulting in 101,243 recorded illnesses and at least 22 deaths. Some water supply experts believe that 10 times as many outbreaks actually occur but go unreported.

Thousands of toxic chemical compounds are used today in industry, homes, and on farms, and hundreds of new compounds are being developed each year. The careless use and disposal of many of these chemicals is contaminating our drinking water. In 1974, the Environmental Protection Agency (EPA) reported that the drinking water in New Orleans, Louisiana, contained trace amounts of 66 organic chemicals. In 1975, an EPA survey of public water supplies in 80 cities found small amounts of organic chemicals present in each of these systems. While little is known about the health effects of most chemicals, the public is concerned that many cause cancer, birth defects, and other related health problems.

THE FEDERAL PROGRAM TO INSURE SAFE DRINKING WATER

In December 1974, the Congress passed the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*) to insure that public water supply systems throughout the Nation meet minimum national standards for the protection of public health. The act represents the first national commitment to safeguard public drinking water supplies. Prior to 1974, Federal authority to regulate drinking water was limited to water provided on interstate carriers.

The act established a joint Federal-State program to insure safe drinking water. It directed the Administrator, EPA, to establish primary drinking water regulations, setting national health standards for drinking water. It also gave the Administrator authority to delegate to the States 1/ primary responsibility, commonly referred to as primacy, for enforcing the

---

1/The term "State" as defined in the Safe Drinking Water Act and used in this report includes the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, the Trust Territory of the Pacific Islands, and the Northern Mariana Islands.

regulations and supervising the approximately 215,000 public water systems in the country. A public water system is one which has at least 15 service connections or regularly serves a minimum of 25 people, and according to the regulations, at least 60 days a year.

The act also requires that water system operators notify their users each time the system fails to meet one of the drinking water quality standards or to test its supplies as required by the regulations. The Congress anticipated that such notification would develop public awareness of the problems facing water systems, increase support for expenditures to solve these problems, and inform the public of any potential or actual drinking water health hazards.

THE DRINKING WATER REGULATIONS

EPA issued the national interim primary drinking water regulations in December 1975, setting drinking water quality standards for coliform bacteria, turbidity (cloudiness), and inorganic and organic chemicals. The regulations were amended in July 1976 to establish a standard for radionuclides. The regulations also prescribe how often drinking water supplies must be tested for each contaminant and steps water owners or operators must take to notify EPA or the primacy State and water users when a standard is exceeded or required testing is not performed.

The interim primary drinking water regulations define two types of public water systems--community and noncommunity. Community systems serve year-round residents whereas noncommunity systems serve transient, nonresident populations. Noncommunity systems include motels, hotels, campgrounds, restaurants, hospitals, and any other public accommodation with its own water supply. Some schools, factories, and churches are considered noncommunity systems. EPA data shows that as of December 1981, there were about 65,000 community and 150,000 noncommunity systems in this country. The drinking water regulations became effective for community systems on June 24, 1977, and for noncommunity systems on June 24, 1979.

HOW A STATE ASSUMES PRIMACY

The Safe Drinking Water Act requires that for a State to assume primacy it must (1) adopt drinking water regulations as stringent as the national regulations, (2) have adequate procedures for enforcing the State regulations, (3) meet EPA recordkeeping and reporting requirements, (4) issue variances and exemptions (if the State elects to do so) under conditions as stringent as those in the act, and (5) have a plan for providing emergency water supplies. EPA has set out in detail what is considered to be an adequate enforcement program. (See app. I for primacy requirements.)

To assist States in developing and implementing their drinking water programs, the act authorizes EPA to award annual public water system supervision grants. The grants, which are based on population, land area, and the number of public water systems, may cover up to 75 percent of a State's total program cost. From fiscal year 1976 through 1982, EPA will have awarded about $160 million in Federal grants to the States.

As of December 31, 1981, 48 States had established drinking water programs and were granted primacy by EPA. The remaining nine nonprimacy States--the District of Columbia, Indiana, Iowa, Oregon, Pennsylvania, South Dakota, Wyoming, American Samoa, and the Northern Mariana Islands--have either declined or were not granted primacy. Iowa, originally granted primacy in September 1977, withdrew from the program July 1, 1981, because of insufficient State funding to operate the program.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our review concentrated on evaluating the implementation of the Safe Drinking Water Program in three EPA regions--Region III (Philadelphia), Region VI (Dallas), Region VIII (Denver), covering Colorado, Oklahoma, Pennsylvania, South Dakota, Texas, Virginia, and West Virginia. Five of the States (Colorado, Oklahoma, Texas, Virginia, and West Virginia) are primacy States, while Pennsylvania and South Dakota are nonprimacy States.

Our work locations were not selected on a scientific or statistical basis. Pennsylvania was included because, with approximately 2,500 community water systems, it is the largest of the nonprimacy States and has one of the Nation's largest number of community water systems. South Dakota, in contrast, has a relatively small number of rural community water systems--approximately 460--scattered over a large area. The five primacy States selected had their programs in operation for at least 2 years. The Director, State Programs Division, EPA Office of Drinking Water, told us that he believed that the three EPA regions included in our review were representative of the program.

In performing our review, we examined various documents and interviewed drinking water program officials at each of the five primacy States, the three EPA regional offices, and EPA headquarters. We reviewed the Safe Drinking Water Act, its legislative history, subsequent congressional hearings on its implementation, Federal and State drinking water regulations, and other EPA policies and guidelines. We interviewed officials involved in developing, implementing, enforcing, and evaluating the drinking water program, including officials of EPA's Office of Drinking Water, Enforcement Division, the Office of General Counsel, and the Office of Legislation.

We held interviews with officials of Colorado's Water Quality Control Division, Oklahoma's Division of Environmental Health Services, Pennsylvania's Department of Environmental Resources, Virginia's Bureaus of Water Supply Engineering and Community

Health Services, South Dakota's Department of Water and Natural Resources, Texas' Water Hygiene Division, and West Virginia's Office of Environmental Health Services. In addition, we also reviewed available monitoring activity files for 140 randomly selected community water systems and 70 randomly selected non-community water systems in the seven States included in the review.

We performed our review in accordance with the General Accounting Office's current "Standards for Audits of Governmental Organzations, Programs, Activities, and Functions."

CHAPTER 2

WATER SYSTEM SUPPLIERS NOT MEETING FEDERAL TESTING REQUIREMENTS

EPA's national interim primary drinking water regulations require that the water supplies of public systems be tested periodically to guard against contamination. Yet, in fiscal year 1980, EPA statistics show that over 146,000 violations were recorded against 28,000 of the Nation's 65,000 community systems. (EPA does not compile statistics on noncommunity systems.) Our detailed review of the testing activities of 140 community and 70 noncommunity water systems supports the national statistics. For example, of the 140 community systems reviewed, we identified 701 violations by 93 of the systems.

EPA and State drinking water program officials cited several reasons for the significant number of testing violations. These reasons included the lack of full-time and properly trained operators, operator apathy toward the Federal testing requirement, and insufficient resources--both funding and personnel--to meet the Federal testing requirements.

The inability to properly test these water supplies has not, to our knowledge, resulted in either a waterborne disease outbreak, serious illness, or death. But, the absence of such tests has negated a congressional intent that water provided to the general public is tested and is safe to drink.

WATER TESTING REQUIREMENTS

To insure the quality of the Nation's drinking water supply, EPA established, in its implementing regulations, specific testing requirements for all community and noncommunity systems. For example, coliform bacteria testing is required for all community and noncommunity systems. The number of test samples to be taken per month for community systems ranges from 1 to 500, depending on the number of persons served by the system. 1/ Noncommunity systems are required to take test samples at least once during each calendar quarter the system is operating. Daily turbidity testing is required for all systems using a surface water source, but such tests are not required for those systems using ground water as the supply base.

1/For example, a system serving 1,000 people is required to take only 1 sample per month, whereas a system serving 25,000 is required to take 29 samples per month. Systems serving 4.69 million or more people are required to take 500 samples per month.

The regulations require community systems using surface or ground water supplies to test for inorganic chemicals. Initial testing of these supplies was to be completed by June 1978 and June 1979 for surface and ground water, respectively. The systems must then monitor their supplies annually for surface water and every 3 years for ground water. Noncommunity systems, however, are only required to test for the inorganic chemical nitrate and had until December 1980 to complete initial testing. The States determine when subsequent nitrate tests are due.

The regulations require that only community systems using surface water need to test for organic chemicals. The initial testing was to be completed by June 1978, with subsequent tests being done once every 3 years. For radionuclides, initial testing for community systems using surface or ground water supplies was to be completed by June 1980. Subsequent tests are required once every 4 years. Noncommunity systems are not required to test for either organic chemicals or radionuclides.

RESULTS OF TESTING ACTIVITIES

In fiscal year 1980, 90 of the 140 community systems and 48 of the 70 noncommunity systems included in our sample failed to comply with the Federal testing requirements for one or more of the contaminant groups. Noncompliance ranged from missing a single monthly coliform bacteria sample to not testing an entire system for any contaminants during the 12-month period. Coliform bacteria constituted the greatest area of noncompliance, with 53 of the 90 community systems failing to perform the required tests. Radionuclide and inorganic chemical testing was not completed for 44 and 34 community systems, respectively. Appendix II contains tables showing, by contaminant and State, the number of sampled community systems that failed to comply with the Federal testing requirements.

WHY WATER SYSTEMS ARE NOT COMPLYING WITH EPA TESTING REQUIREMENTS

EPA and State drinking water program officials gave several reasons as to why systems are not complying with the testing requirements. For example, the Chief, Pennsylvania Section, Water Supply Branch, EPA's Philadelphia Regional Office, stated that small systems, which often lack full-time and properly trained operators, were responsible for the majority of testing violations.

The Fredericksburg Water Association in Martinsburg, Pennsylvania, demonstrates this point. This association operates a small community water system serving about 200 customers. During fiscal year 1980, the system failed to test its water supply for coliform bacteria in 10 of the 12 months such tests were required. In 1 of the 2 months during which water samples were taken, the water contained levels of coliform bacteria in excess of the standard. The association president told us that the water system's operator is a full-time truck driver and only works on the system part time. Since he is away much of the time, the necessary tests are often not taken.

Another reason EPA regional and State officials gave for systems not complying with the testing requirements was operator apathy. For example, in discussions with the Director, Water Facilities Engineering Service, Oklahoma Department of Health, we were told that operator apathy was considered a significant problem associated primarily with small water systems. The Bradley, Oklahoma, system amply demonstrates this point. This small community system serves about 150 customers. In our tour of Bradley, we found this water system to consist of a water tank and two 80-foot deep wells. At the the time of our visit, one of the wells was being repaired. The two wells appeared to be sealed in concrete and were enclosed in concrete block buildings. One building contained a separate chlorinator room, but the chlorination equipment was not in use.

The system operator said that he is responsible for taking care of the system and obtaining the required water samples. In the case of coliform bacteria, two samples are to be taken each month. The operator stated, however, that he does not have the time to take the required samples; consequently, the samples are only taken when he gets around to it. The operator manages a service station and said that he is generally too busy to devote much time to the water system. He further stated that he serves on the water board only to help the town. He receives no compensation for his work with the water system.

A series of seminars conducted in 1980 by the Conference of State Sanitary Engineers, which was funded under an EPA grant, confirmed that the lack of technical expertise and system operator apathy are major causes of small water systems failing to comply with Federal testing requirements. The final report on the seminars states it was the consensus of opinion that

> "* * *small system violations and failings come across as multiple and frequent and the weight of their causality falls upon the human factor. Owner and 'operator' apathy, lack of technical know-how, ignorance of State standards and regulations--these seem to underlie the poor performance of the small systems."

SOME STATES ARE NOT DOING THE REQUIRED TESTING

Another factor contributing to noncompliance with the drinking water program requirements is the failure of the States to perform the tests they agreed to do. For example, the five primacy States in our review are responsible for collecting the initial and subsequent radionuclide and/or inorganic and organic chemical samples for community water systems in their States.

However, two of the five States--Colorado and West Virginia--did not collect the required samples for 35 of the 40 systems included in our review.

Again, officials gave several reasons for not doing the required tests. The principal reasons were lack of State resources--funds and personnel. For example, in West Virginia, the State is responsible for collecting the required samples from 504 of its 618 community water systems. (The 114 remaining systems purchase their water from the other systems and, according to the section chief of the West Virginia Drinking Water Division's Northern Districts, are not tested for chemicals and radionuclides because the water sold to these systems should already be tested.) Of the 504 systems, 336 are ground water systems and 168 are surface water systems. As of June 1980, the 336 ground systems should have been tested for inorganic chemical and radionuclide contamination and the 168 surface systems for inorganic and organic chemicals and radionuclides. Yet, we found that during fiscal years 1978 through 1980, only 78 surface and 5 ground water systems had had the required initial testing done. Our review also showed that although the drinking water regulations require that community surface systems be tested annually for inorganic chemicals, only 52 of the 168 surface systems had been tested during fiscal year 1980.

The section chief, West Virginia Drinking Water Division's Southern Districts, attributed the State's failure to comply with the Federal testing requirements to the lack of personnel and travel funds. Only one district engineer is responsible, in addition to other duties, for collecting all organic, inorganic, and radionuclide samples in the State. He also stated that whether the required tests would be completed depended upon the future level of Federal and State funding for the program.

The section chief, West Virginia Drinking Water Division's Northern Districts, said that although the State has a need for 28 professional personnel in the drinking water program, only 16 positions were funded in fiscal year 1980. If the State were able to fill the other 12 positions, 8 would be used in the field to do the necessary testing, investigation, and site visits required under the Safe Drinking Water program.

The chief stated that reduced State funding, inflation, and minimal increases in Federal funding have seriously affected West Virginia's efforts to adequately maintain a viable drinking water program. In fiscal years 1980 and 1981, the Federal funding was $330,000 and $339,000, respectively. At this level of funding, the State cannot compete with the salaries private industry offers. Young engineers stay with the State long enough to obtain experience and then move on.

LIMITED ACTIONS TAKEN BY EPA AND THE STATES TO ENSURE COMPLIANCE WITH FEDERAL REQUIREMENTS

The Safe Drinking Water Act provides the Administrator, EPA, with a mechanism to enforce compliance with the act's requirements. The Congress intended that compliance would be the primary responsibility of the States, localities, and the Nation's water systems. This has not occurred in all cases. EPA statistics project that 13,606 public water systems cannot, without improving their facilities, meet one or more of the drinking water quality standards. Thousands of other systems are also not complying because they failed to (1) submit required monitoring reports, (2) properly test their water sources, (3) follow schedules specified in their variance or exemption authorization to construct new or upgrade their existing facilities, or (4) comply with the act's public notification requirements.

The enforcement actions in the three EPA regional offices and the seven States included in our review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and were not as timely as they could or should have been. For example, we reviewed fiscal year 1980 compliance reporting data on each of West Virginia's 618 community water systems. Our analyses showed that 196 of the 618 systems (32 percent) had been in violation of Federal regulations pertaining to coliform bacteria and/or turbidity for 4 or more months. The analyses also showed that 51 of these 196 systems were in a noncompliance status for the entire 12-month period.

We randomly selected 10 of the 51 systems for further detailed analyses to determine what enforcement actions the State took to bring these persistent violators into compliance. Our review of available files and discussions with State officials showed that while all 10 systems had been sent notices of violation for two consecutive quarters during fiscal year 1980, no further action had been taken on 9 of the 10 systems. One system received a threat of legal proceedings. The system owner/operator agreed to take corrective measures, and with this agreement, enforcement action ceased. The files did not contain any information to indicate that the system took corrective action.

The chief, West Virginia Drinking Water Division's, Southern Districts, told us that the State had made no attempt to identify persistent violators until December 1980. He further stated that even though an informal identification system has now been established, the lack of staff and funding available will mean that any action taken on these violating systems could take up to 2 years to accomplish.

EPA's West Virginia program manager told us that he was unaware of the extent of noncompliance problems in the State. He said that EPA does not identify persistent violators and that as a program manager he is only interested in the State enforcement program's overall administration, not its specifics.

According to EPA's chief, Drinking Water Branch, State Programs Division, following the act's passage in December 1974, EPA concentrated for several years on formulating a program. This effort included developing and publishing the national interim primary drinking water regulations, assisting the States in meeting the requirements for primacy, reviewing and approving State implementation plans, establishing an inventory of water systems, and developing a management information system. Enforcement actions during this period were generally limited to emergency situations.

EPA'S EFFORT TO DEAL WITH NONCOMPLIANCE

EPA's first concerted effort to deal with noncompliance problems was in June 1980, when EPA issued its small system compliance strategy. EPA developed the strategy because an Office of Drinking Water financial study 1/ documented that small water systems accounted for the majority of the noncompliance problems. Further, the financial study indicated that many of these small systems cannot comply with the drinking water standards because of serious financing and/or operating problems.

The small system compliance strategy required that beginning in fiscal year 1981, each primacy State would include in its program plan, which accompanies the State grant application, a set of enforcement criteria that would guide the State's use of its enforcement resources. EPA and the State would negotiate the types of violations requiring priority enforcement. According to the strategy, the State would be responsible for consistently applying its enforcement resources to the identified priority violators.

Since the program was not fully implemented at the time of our review, we were unable to evaluate its effectiveness. However, our analyses of fiscal year 1981 EPA-approved State program plans for the five primacy States included in our review disclosed several inconsistencies. For example, Texas' plan specified that enforcement would be prioritized on the basis of contaminant violation. On the other hand, West Virginia's plan specified that overall enforcement priority would be given to systems that violated the drinking water quality standards, with surface systems receiving top priority. In contrast, Oklahoma's plan merely explained its enforcement procedures and specified factors that would be considered in initiating enforcement, such as degree of health hazard, frequency of violation, and system efforts to comply with the regulations.

1/"Community Water Systems: Financial Aspects of Compliance with Interim Primary Drinking Water Regulations," June 16, 1980.

CONCLUSIONS

The Congress intended that the drinking water supplies of public water systems be periodically tested to guard against contamination of the supply and to protect the public health. Yet, EPA statistics show that for fiscal year 1980, over 146,000 violations were recorded against 28,000 of the 65,000 community water systems in the country.

The act provided an enforcement mechanism for the Administrator, EPA, to use to force compliance with the act. However, it was the Congress' intent that such compliance would be the primary responsibility of the States, localities, and the Nation's water systems. This has not, in many cases, occurred. EPA's own statistics project that 13,600 public water systems in the Nation cannot, without improving their facilities, meet one or more of the drinking water quality standards. Thousands of other systems are also in noncompliance because of their failure to submit required monitoring reports, properly test their water sources, follow schedules specified in their variance or exemption authorization to construct new or upgrade existing facilities, and finally, to comply with the act's public notification requirements.

We found that the enforcement actions in the three EPA regional offices and the seven States included in our review to bring water systems into compliance ranged from none to minimal, followed no particular pattern, and was not as timely as it could or should have been.

In recognition of widespread noncompliance with the drinking water regulations, EPA, in June 1980, issued its small system compliance strategy, which became effective in fiscal year 1981. The strategy was directed at obtaining compliance with the drinking water standards as quickly as feasible, starting with the more immediate and serious risks to public health. The strategy, however, was not specific and gave the States discretion to allocate their resources and to follow-up on the instances of noncompliance. This has resulted in an inconsistent application of the strategy.

While the strategy is a step in the right direction, EPA needs to further define those specific factors that the States must consider in ranking noncomplying water systems for enforcement action. Specific guidelines to be used by the States in conjunction with the compliance strategy would provide EPA with a consistent and effective plan of action to begin dealing with the significant noncompliance problems facing implementation of the act.

RECOMMENDATION

We recommend that the Administrator, EPA, direct the Office of Drinking Water to develop and implement specific guidelines that the States can use when developing the enforcement strategy section of their State plans. The guidelines should include a model for ranking water systems for enforcement action, including, as a minimum, such factors as (1) the type of violation (exceeding water quality standard or failure to test), (2) the degree of violation (extent to which the drinking water quality standard is exceeded or the number of months the water supplier failed to test), and (3) the size of population affected by the violation. The guidelines should also identify the various types of enforcement actions available to the States and the order in which each action should be taken. Finally, the guidelines should clearly define the terms "serious violators" and "less serious violators." The guidelines will help States to more effectively use their limited resources and provide for consistent application of enforcement actions.

AGENCY COMMENTS

In commenting on our report, EPA officials generally agreed with our conclusions and recommendation. EPA plans to issue a public water system compliance strategy for the States' use in developing their own enforcement strategies. EPA hopes that the strategy, which will contain factors for States to use in ranking noncompliant systems, will result in compliance with the drinking water regulations by all public water systems.

CHAPTER 3

THE PUBLIC NOTIFICATION

SYSTEM'S EFFECTIVENESS IS QUESTIONABLE

Failure to notify water system users when a violation occurs appears to be the norm rather than the exception. EPA statistics show that over 146,000 community water system violations were reported during fiscal year 1980. The systems notified the public for only 16,000 of these violations. Our review of 140 community systems supports these statistics. We identified 701 violations, and in only 63 cases was the public notified. Our review, however, did not identify any instances where either the violation of a water quality standard or the failure to test a water source has resulted in a waterborne disease outbreak, a serious illness, or death. Yet, the fact remains that the Congress, when it passed the Safe Drinking Water Act, had a purpose for requiring that public notification be made on each violation.

CONGRESSIONAL INTENT FOR PUBLIC NOTIFICATION

The Congress intended that including the public notification requirement in the Safe Drinking Water Act would

--inform and educate the public about problems and shortcomings in their water systems and mobilize public support for the expenditures associated with needed improvements and

--alert the public to precautions they must take whenever their drinking water contains certain contaminants in concentrations that might be harmful to their health.

The House Report which accompanied the act more fully described the reasons for public notification:

> "The purpose of this notice requirement is to educate the public as to the extent to which public water systems serving them are performing inadequately in light of the objectives and requirements of this bill. Such public education is deemed essential by the Committee in order to develop public awareness of the problems facing public water systems, to encourage a willingness to support greater expenditure at all levels of government to assist in solving these problems, and to advise the public of potential or actual health hazards." 1/

1/ Page 24 of H. Rept. 93-1185.

EPA'S IMPLEMENTING REGULATIONS TO CARRYOUT THE PUBLIC NOTIFICATION SYSTEM

In its implementation regulations, EPA requires community water system owners or operators to provide written notification to users, via water bills or other direct mailing, each time a system's water supply fails to meet any of the water quality standards contained in the regulations or is not tested in accordance with the regulations. Notification must occur within 3 months of the violation and be repeated at least once each quarter for as long as the violation continues. In instances where a standard is exceeded, the system must also publish a notice in a newspaper serving the area within 14 days of learning of the violation and provide copies to radio and television stations within 7 days. This requirement may be waived by EPA or the primacy State if the violation is promptly corrected, its cause eliminated, or a public health risk is no longer present.

The drinking water regulations also require that public notices be clearly written and fully inform the public. According to EPA, a public notice should include the system's name, the contaminant (e.g. coliform bacteria, chemical, or radionuclide), type of violation, precautionary steps the users should take, and actions the system has planned or is taking to correct the problem.

WHY ISN'T THE PUBLIC NOTIFICATION SYSTEM WORKING?

Opinions differ among EPA and State drinking water program officials as to whether the public notification system is working. Yet, the statistics clearly indicate that the system is not working. In fiscal year 1980, there were 146,000 violations and only 16,000 public notifications. Our sampled 140 systems had 701 violations and only 63 notifications. However, these statistics only address a part of the problem. The other part is whether public notification, when it does take place, achieves the two objectives intended by the Congress.

The Congress' first objective--notification of potential or actual health hazards--is of primary importance. While little information is available regarding this area, it does appear that when employed, public notification is extremely effective. For example, in March 1980, a major oil pipeline ruptured contaminating the Rappahannock River, which is the major drinking water supply source for Fredericksburg, Virginia. Contamination of the Rappahannock posed an imminent health hazard to Fredericksburg water system users. Public notification was made immediately through the news media--radio, television, and newspapers--contingencies for alternate drinking water supply sources were established, an effective clean-up effort was initiated, and a serious imminent threat to the public health was averted.

The effectiveness of alerting water system users of a potential health hazard--not an emergency--is questionable because of the time lag between the occurrence of the potential health hazard and notification to the users.

For example, excessive coliform bacteria levels in drinking water pose a potential health threat. However, EPA regional offices and primacy States often wait until the end of the month (or quarter for systems serving 3,300 or less) in which the samples are taken before determining whether the system exceeded the bacteria standard. Consequently, by the time the system learns of the violation and of the need for public notification, it is too late to effectively warn water users of any potential health threat.

An example of long lag time follows. In July 1980, the New Berlin, Pennsylvania, community water system, which serves 850 customers, violated the coliform bacteria standard. EPA's Philadelphia regional office identified the violation on August 19, 1980, and notified the system of the violation and the need for public notification on September 11, 1980. The system in turn notified its users of the violation by letter on September 15, 1980--2 months after the violation occurred. Although we are unaware of any sickness or illness resulting from this incident, the point remains that public notification was not made in sufficient time to adequately warn the users of a potential health threat.

With regard to the Congress' second objective--to inform and educate the public about problems and shortcomings in their water systems and mobilize public support for the expenditures associated with needed improvements--we also question the effectiveness of the program.

Again, little information is available regarding either the program's effectiveness or the costs associated with public notification. However, two published studies--the first entitled "Evaluation of the Cost and Effectiveness of Public Notification Requirements" by Applied Science Associates, Inc., under contract with EPA and the second entitled "Public Notification: Pain or Panacea" by W. Bruvold and J. Gaston published in the "Journal of the American Water Works Association," March 1980--revealed the following information.

Data for the Applied Science Associates, Inc., study was collected from 14 States identified by EPA. Ten of the States had primacy, and EPA administered the program in the other 4 States. The rate of issuance of public notification in these States had been high.

A questionnaire was mailed to 190 water systems identified by the States. Completed questionnaires were obtained from 176 water systems (93 percent). Data for 164 water systems were analyzed. Researchers interviewed 1,400 customers from 28 of the water systems.

Sixty-two of 144 water systems indicated that they did not design their notification to elicit public support. (Twenty of the 164 water systems analyzed did not respond to the question of system notification design.) For the 82 water systems that did, 61 percent said they felt it was not effective, 23 percent said it was somewhat effective, and only 16 percent said it was very effective. All of those saying it was very effective were small water systems. Two-thirds of the large water systems did not use public notification in this way, and three out of four who did said it was not effective.

Thirty-seven percent of the water systems felt their customers were willing to spend additional money for improvements in their water services, 31 percent felt their customers were only willing to spend additional money to correct problems as they arose, and 7 percent felt their customers were only willing to spend money to build new facilities or modernize existing ones. Twenty-four percent of the systems thought the customers would be willing to spend additional funds for both. No relationship existed between the effectiveness of public notification and the willingness to spend money.

Over 50 percent of the systems took the time to write comments about the public notification requirements. The most common complaints dealt with the requirement of notifying for one bad sample, the delay between the violation and the notification, and the requirement to use both direct and indirect notification. Generally, the systems did not find the consumer reaction to be worth the cost of notification. The water systems were in agreement that public notification does little to educate or inform the public, and some systems felt notices alarm customers. While some systems feel that consumers are generally indifferent to water problems, others express the feeling that it is unreasonable to expect customer support, given the delay between the violation and notification.

The Bruvold and Gaston study consisted of ascertaining public awareness of public notification in eight California communities. Surveys were conducted approximately 1 month after the most recent notifications were distributed to the communities. About one-half of the respondents clearly recalled receiving the notification, 10 percent were not sure, and about 40 percent had never seen it. When asked about the nature of the problem, 7 percent of the respondents clearly understood the problem requiring notification, 46 percent partially understood the problem, 9 percent did not understand the problem, and 38 percent were unaware that the problem existed.

While we recognize that these two limited studies are not in themselves conclusive evidence of either program success or failure, they do agree with information we obtained through discussions with both EPA and State drinking water officials on the system's effectiveness. For example:

--The section chief, West Virginia Drinking Water Division's Southern Districts, told us that public notification is untimely and not effective for alerting users to immediate health hazards. This official viewed it as a type of punishment. The section chief, Northern Districts, felt that public notification is ineffective because it is untimely, water users do not understand the notices, and users are apathetic toward public notification.

--The water supply program integrator, Oklahoma Environmental Health Services, told us that constantly requiring public notification has diluted the effectiveness of the program and resulted in user apathy toward the process. He said that some water quality problems will take 5 or 6 years to correct and requiring public notice while the problem continues is ridiculous.

--The EPA Denver regional office South Dakota section chief told us that public notification is not effective because it usually occurs 1 to 1-1/2 months after the violation--too late to be effective in warning users of potential health hazards. Also, this official told us the notices generally appear in the newpaper's legal section, which in his opinion, is not read.

ACTIONS EPA IS TAKING ON PUBLIC NOTIFICATION SYSTEM

In December 1981, EPA responded to the Applied Science Associates, Inc., report on the cost and effectiveness of public notification by publishing an issue paper requesting public comment on the public notification requirements and several other aspects of the drinking water program. EPA anticipated that the public and private input would help formulate proposed amendments to the act or, as a minimum, to the Federal drinking water regulation.

The EPA Office of Drinking Water held two public hearings on the issue paper in early February 1982 and plans to provide the National Drinking Water Advisory Council with a summary of the comments and proposed recommendations late in March 1982. The Office of Drinking Water anticipates that shortly thereafter the council will forward the recommendations on to the Administrator, EPA.

In a January 1982 meeting, the Director, Office of Drinking Water, told us that EPA's thinking regarding public notification is not to abandon the process but to make it more flexible--requiring it for water systems that continually fail to test their water or meet the water quality standards and reducing or possibly eliminating the requirements for public notification for systems which only occasionally violate the regulations.

CONCLUSIONS

While the Congress' intent in establishing the public notification requirements in the Safe Drinking Water Act is clear, implementation of the program and its overall effectiveness appears questionable. Literally thousands of violations each year--both for failure to test the water supplies and for exceeding the drinking water quality standards--go unreported to the systems' users. Apathy appears to reign supreme on the part of both the users and Federal, State, and local government officials on the need for, as well as the effectiveness of, the program. No evidence exists in our review to show that the failure to notify system users has resulted in waterborne disease outbreaks, illness, or death.

Yet, in an emergency situation, the program appears to be effective and, in fact, necessary to ensure the protection of system users.

EPA's current action in studying the program--both its pros and cons--is a step in the right direction. If properly and effectively carried forward, this effort should result in actions designed to improve the program.

STATE PRIMACY REQUIREMENTS

State primacy requirements are set forth in 40 C.F.R. 142.10 of the National Interim Primary Drinking Water Regulations. To receive primacy the States must:

--Adopt drinking water regulations that are at least as stringent as the national interim primary drinking water regulations.

--Adopt adequate procedures for maintaining a public water system inventory.

--Establish a systematic program for conducting sanitary surveys of public water systems, with priority given to systems not in compliance with the State drinking water regulations.

--Establish and maintain an adequate program for certifying the laboratories that conduct the drinking water tests.

--Assure that laboratory facilities are certified by EPA and capable of performing analytical measurements specified in the drinking water regulations.

--Establish and maintain procedures for recordkeeping and reporting its activities.

--Establish a plan to supply drinking water during emergencies.

--Establish and maintain an activity to review the design and construction of new or modified water facilities to insure that the systems are capable of providing water which meets the State drinking water standards.

--Issue variances and exemptions (if it elects to do so) under conditions as stringent as those in the act.

--Have the authority to apply the State drinking water regulations to all public water systems under the State jurisdiction.

--Have the authority to assess civil and criminal penalties for violations of the State drinking water regulations by public water systems.

--Have the authority to require public water systems to give public notice of violations of the State primary drinking water regulations.

--Have the authority to sue in courts to enjoin any threatened or continuing violation of the State drinking water regulations.

--Have the authority to require public water systems to keep appropriate records and make appropriate reports to the State.

--Have the right to enter and inspect public water systems, including the right to take water samples.

SAMPLED COMMUNITY SYSTEMS FAILING TO COMPLY WITH FEDERAL MONITORING REQUIREMENTS, BY STATE AND CONTAMINANT

State	Systems sampled	Systems with violations
	Coliform Bacteria	
Pennsylvania	20	6
Virginia	20	4
West Virginia	20	11
Texas	20	1
Oklahoma	20	13
Colorado	20	10
South Dakota	20	8
Total	140	53
	Turbidity	
Pennsylvania	5	1
Virginia	2	-
West Virginia	8	1
Texas	9	2
Oklahoma (note a)	12	7
Colorado	2	-
South Dakota	2	-
Total	40	11
	Inorganic Chemicals	
Pennsylvania	20	1
Virginia	20	-
West Virginia	20	19
Texas	20	-
Oklahoma	20	-
Colorado	20	12
South Dakota	20	2
Total	140	34

Organic Chemicals

State	Systems sampled	Systems with violations
Pennsylvania	5	1
Virginia	2	-
West Virginia	8	6
Texas	9	-
Oklahoma	12	-
Colorado	2	-
South Dakota	2	1
Total	40	8

Radionuclides

State	Systems sampled	Systems with violations
Pennsylvania	20	8
Virginia	20	-
West Virginia	20	12
Texas	20	-
Oklahoma	20	-
Colorado	20	5
South Dakota	20	19
Total	140	44

a/Includes nine systems which purchase water from other systems and are not required to test for turbidity. However, our review of records for those systems selling the water showed that five had failed to perform the required turbidity testing.

97TH CONGRESS
1ST SESSION

S. 1866

To assure safe drinking water.

IN THE SENATE OF THE UNITED STATES

NOVEMBER 18 (legislative day, NOVEMBER 2), 1981

Mr. GORTON (for himself, Mr. GRASSLEY, Mr. BENTSEN, and Mr. ABDNOR) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

---

A BILL

To assure safe drinking water.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Safe Drinking Water Regulatory Reform Act".

ADMINISTRATIVE PROCEDURES AND JUDICIAL REVIEW

SEC. 2. (a) The first sentence of section 1448(a) of the Public Health Service Act (42 U.S.C. 300j–7) is amended to read as follows: "Except as otherwise expressly provided in this Act, petition for judicial review of any action of the Administrator under this title may be filed only in the United States Court of Appeals for the District of Columbia Circuit or in the United States court of appeals for any judicial circuit in which a substantial portion of the impact or injury associated with the action of the Administrator will occur.".

(b) Section 1412(d) of the Public Health Service Act (42 U.S.C.) is amended to read as follows: "In proposing and promulgating regulations under this section, the Administrator shall consult with the Secretary and the National Drinking Water Advisory Council. The Administrator shall consider any relevant advice or recommendations of the Council, and any separate statement or statements by individual Council members as provided in section 1446(e).".

(c) Section 1412 of the Public Health Service Act (42 U.S.C. 300g–1) is amended by adding the following subsection to the end thereof: "A rule promulgated under this section shall be accompanied by (A) a statement of the basis and purpose of the rule, (B) an explanation of the reasons for any major changes in the promulgated rule from the proposed rule, (C) a determination that the costs of compliance with the rule are justified by the benefits resulting from the application of such rule, together with a detailed analysis setting forth (i) the factual data on which such determination is made, and (ii) the reasons for such determination, and (D) a statement of the reasons why any alternatives to the proposed rule submitted by any person during the comment period were rejected, taking into account effectiveness, efficiency, and costs.

"A rule promulgated under this section shall also be accompanied by a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations during the comment period.

"A rule promulgated under this section shall not be based (in part or whole) on any information or data which has not been placed in the docket as of the date of such promulgation.".

STANDARD FOR PROMULGATION OF DRINKING WATER REGULATIONS

SEC. 3. (a)(1) Section 1401(1)(B) of the Public Health Service Act (42 U.S.C. 300f(1)(B)) is amended by striking out ", in the judgment of the Administrator, may have any adverse effect on" and inserting in lieu thereof "pose an unreasonable risk to".

(2) Section 1401(1)(D) of such Act (42 U.S.C. 300f(1)(D) is amended by striking out "and to insure" and all that follows down to the period at the end thereof.

(b) Section 1412(a)(2) of such Act (42 U.S.C. 300g–1(a)(2)) is amended by striking out "to the extent feasible" and substituting "from any unreasonable risk" and by striking out "the Administrator determines".

(c) Section 1412(b)(1)(A)(ii) of such Act (42 U.S.C. 300g–1(b)(1)(A)(ii)) is amended by striking out "may have an adverse effect on" and inserting in lieu thereof "pose an unreasonable risk to".

(d) Section 1412(b)(1)(B) of such Act (42 U.S.C. 300g–1(b)(1)(B)) is amended—

(1) in the first sentence, by striking out "in his judgment";

(2) in the first sentence, by striking out "may have any adverse effect on" and inserting in lieu thereof "poses an unreasonable risk to";

(3) in the second sentence, by striking out "in the Administrator's judgment";

(4) in the second sentence, by striking out "known" and all that follows through the period and inserting in lieu thereof "unreasonable risk to the health of persons occurs"; and

(5) in the third sentence, by striking out "may have any adverse effect on" and inserting in lieu thereof "poses an unreasonable risk to".

(e) Section 1412(b)(3) of such Act (42 U.S.C. 300g–1(b)(3)) is amended by striking out "the Administrator finds".

(f) Section 1415(a)(1)(A) of such Act (42 U.S.C. 300g-4(a)(1)(A)) is amended by striking out "the Administrator finds".

(g) The amendments made by this section shall apply only to primary drinking water regulations promulgated after the date of the enactment of this Act.

TREATMENT TECHNIQUES

SEC. 4. (a)(1) Section 1401(1) of the Public Health Service Act (41 U.S.C. 300f(1)) is amended by striking out subparagraph (C) and inserting in lieu thereof the following:

"(C) specifies maximum contaminant levels for such contaminants; and".

(2) Section 1412(a)(2) of such Act (42 U.S.C. 300g-1(a)(2)) is amended by striking out ", treatment techniques,".

(3) Section 1412(a)(3) of such Act (42 U.S.C. 300g-1(a)(3)) is amended by striking out ", treatment techniques,".

(b)(1) Section 1412(b)(3) of such Act (42 U.S.C. 300g-1(b)(3)) is amended—

(A) in the first sentence, by striking out "or require the use of treatment techniques" and "or which is listed";

(B) by striking out "feasible" in the second sentence and substituting "reasonable"; and

(C) by striking out the last three sentences.

(2) Section 1412(b)(4) of such Act (42 U.S.C. 300g–1(b)(4)) is amended by striking out ", treatment techniques,".

(c) Section 1414(c)(1)(A) of such Act (42 U.S.C. 300g–3(c)(1)(A)) is amended by striking out "or treatment technique requirement".

(d) Section 1415(a) of such Act (42 U.S.C. 300g–4(a)) is amended—

(1) by striking out subparagraph (1)(B) in its entirety and redesignating subparagraphs (C), (D), (E), (F), and (G) as subparagraphs (B), (C), (D), (E), and (F), respectively;

(2) in newly designated subparagraph (1)(B), by striking out "or (B)";

(3) in newly designated subparagraph (1)(E), by striking out "and under subparagraph (B)";

(4) in newly designated subparagraph (1)(F), by striking out "or (B)"; and

(5) by striking out paragraph (3) in its entirety.

(e) Section 1415(b) of such Act is amended by striking out "(1)(B) or".

(f) Section 1415 of such Act (42 U.S.C. 300g–4) is amended by striking out subsection (d) in its entirety.

(g) Section 1416(a) of such Act (42 U.S.C. 300g-5(a)) is amended—

(1) by striking out all the words beginning with "respecting" and ending with "both,";

(2) in paragraph (1), by striking out "contaminant level or treatment technique"; and

(3) in paragraph (2), by striking out "contaminant level or treatment technique".

(h) Section 1416(b) of such Act (42 U.S.C. 300g-5(b)) is amended—

(1) in subparagraph (1)(A), by striking out "contaminant level requirement and treatment technique";

(2) in subparagraph (1)(B), by striking out "contaminant level requirement or treatment technique";

(3) in subparagraph (2)(A), by striking out "contaminant level and treatment technique"; and by striking out the words "or treatment technique" wherever they appear; and

(4) in subparagraph (2)(B), by striking out the words "or treatment technique" wherever they appear.

(i) Section 1416 of such Act (42 U.S.C. 300g-5) is amended by striking out subsection (e) in its entirety and redesignating subsections (f) and (g) as subsections (e) and (f), respectively.

(j) Section 1416 of such Act (42 U.S.C. 300g–5) is amended by striking out "and treatment technique requirements" where it appears in redesignated subsection (e).

(k) The amendments made by this section shall apply only to primary drinking water regulations promulgated after the date of the enactment of this Act.

CONTINUATION OF STATE PRIMARY ENFORCEMENT RESPONSIBILITY

SEC. 5. Section 1413 of the Public Health Service Act (42 U.S.C. 300g–2) is amended by adding a new subsection (c) at the end thereof as follows:

"(c)(1) Whenever the Administrator revises or amends any national primary drinking water regulation, a State that has assumed primary enforcement responsibility for public water systems will continue to maintain primary enforcement responsibility subject to the provisions of this subsection.

"(2) Within eighteen months of the effective date of any amendment of a regulation under section 1412 revising or adding any requirement respecting any national primary drinking water regulation, a State with primary enforcement responsibility pursuant to this section shall submit (in such form and manner as the Administrator may require) a notice to the Administrator containing a showing satisfactory to him that the State public water system supervision program meets the revised or added requirement. On a showing of good cause, the Administrator may grant to a State an additional six months to submit the notice.

"(3) Within ninety days after the State's notice under paragraph (2) and after reasonable opportunity for presentation of views, the Administrator shall approve the continuation of State primary enforcement responsibility or make a determination that the State no longer meets the requirements of this section.

"(4) Failure by a State to submit the notice required by this subsection shall be grounds for withdrawal of State primary enforcement responsibility.".

STATE GRANTS

SEC. 6. Section 1443(a) of the Public Health Service Act (42 U.S.C. 300j-2(a)) is amended by adding the following new paragraph after paragraph (5) and renumbering the following paragraphs accordingly:

"(6) The prohibition contained in the last sentence of paragraph (2) may be waived by the Administrator during any time within eigthteen months after the effective date of any amendment or revision of the national primary drinking water regulations if the State has assumed primary enforcement responsibility and is making a diligent effort to comply with the new amendment or revision. On a showing of good cause, the Administrator may grant to a State an additional six months to come into compliance.".

NATIONAL DRINKING WATER ADVISORY COUNCIL

SEC. 7. Section 1446 of the Public Health Service Act (42 U.S.C. 300j-5), is amended to read as follows:

"(a) There is established a National Drinking Water Advisory Council which shall consist of sixteen members appointed by the Administrator after consultation with the Secretary. Four members shall be appointed from the general public; four members shall be persons in the scientific community expert in the field of public health and water hygiene; four members shall be representatives of appropriate State and local agencies concerned with water hygiene and public water supply; and four members shall be representatives of suppliers of water, including both publicly owned and private investor owned suppliers of water. With each appointment, the Administrator shall specify the membership category for which the appointment is being made.

"(b) The Administrator shall give notice of any vacancy on the Council by publication in the Federal Register and in making appointments the Administrator shall consider recommendations for nominees that may be submitted by the National Academy of Sciences and national organizations representing State and local agencies and suppliers of water.

"(c) Each member of the Council shall hold office for a term of three years, except that—

"(1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term;

"(2) the terms of members of the Council on the date of enactment of this Act shall immediately terminate, and the terms of the members first taking office after enactment of this Act shall expire as follows: Five shall expire three years after the date of enactment of the Act, five shall expire two years after such date, and five shall expire one year after such date, as designated by the Administrator at the time of appointment. Any member of the Council whose membership on the Council is terminated under this paragraph (2) shall not thereby become ineligible for membership on the Council as provided by this section;

"(3) the term of any Council member shall immediately terminate if such Council member ceases to be a member of the membership category from which he was appointed as provided in subsection (a) of this section. Any member of the Council whose membership on the Council is terminated under this paragraph (3) shall not thereby become ineligible for membership on the Council as provided by this section.

"(d) The Council shall elect a Chairman and shall adopt rules governing the calling of meetings and the procedure for the conduct of meetings.

"(e) The Council shall advise, consult with, and make recommendations to the Administrator on matters relating to activities, functions, and policies of the Agency under this title. Any recommendation or advice to the Administrator shall be voted upon specifically by the Council and each member of the Council shall have the opportunity to submit a separate statement of dissenting or supplementary views to any recommendation or advice of the Council. Any recommendation or advice shall be transmitted to the Administrator simultaneously with any separate statement or statements pertaining to that recommendation or advice.

"(f) Members of the Council appointed under this section shall while attending meetings or conferences of the Council or otherwise engaged in business of the Council, receive compensation and allowances at a rate to be fixed by the Administrator, but not exceeding the daily equivalent of the annual rate of basic pay in effect for grade GS-18 of the General Schedule for each day (including traveltime) during which they are engaged in the actual performance of duties vested in the Council. While away from their homes or regular places of business in the performance of services for the Council, members of the Council shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703(b) of title 5 of the United States Code.

"(g) Section 14(a) of the Federal Advisory Committee Act (relating to termination) shall not apply to the Council.

"(h) The members of the Council shall be eligible for reappointment as provided by the section.".

INTERIM PRIMARY DRINKING WATER REGULATIONS

SEC. 8. Section 1412 of the Public Health Services Act (42 U.S.C. 300g–1), is amended by striking the last sentence of paragraph (1) of subsection (a) thereof.

II

97TH CONGRESS
2D SESSION

S. 2131

To amend the Safe Drinking Water Act, to provide for the protection of certain recharge areas overlying sole source underground water supplies.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 23 (legislative day, FEBRUARY 22), 1982

Mr. MOYNIHAN (for himself, Mr. D'AMATO, Mr. BAUCUS, Mr. GORTON, and Mr. RANDOLPH) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

---

A BILL

To amend the Safe Drinking Water Act, to provide for the protection of certain recharge areas overlying sole source underground water supplies.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Sole Source Aquifer Protection Act of 1982".

SEC. 2. Part C—Protection of Underground Sources of Drinking Water, of the Safe Drinking Water Act, as amended, is amended by inserting after "SEC. 1425" the following new section:

"SEC. 1426. (a) POLICY.—Recognizing the dependence of the Nation on its ground water resources, it is hereby declared to be the policy of the Congress that the Federal Government shall cooperate with States and municipalities in the preparation and implementation of regional plans for protection of critical ground water recharge areas.

(b) FINDINGS.—The Congress finds that—

(1) almost half of the Nation's citizens depend on ground water for potable water supplies;

(2) scientific evidence is mounting of contamination of ground water by toxic organic compounds, nutrients, salts, and other pollutants in all regions of the country;

(3) ground water contamination, once it occurs, is extremely difficult to mitigate;

(4) certain areas overlying a sole source aquifer are particularly critical in maintaining high quality ground water because of their relatively high rates of existing or potential recharge or proximity to major zones of withdrawal;

(5) prevention of pollution of high quality ground water and protection of its critical recharge watershed area cost substantially less than measures to mitigate harm following contamination; and

(6) there exists no established process to coordinate Federal, State, and local authorities who share responsibility in the protection of ground water resources.

(c) PURPOSES.—The purposes of this section are—

(1) to establish procedures for the designation of special protection areas, defined by hydrogeology water quality, and land use as of critical importance in maintaining water quality in the designated sole source area;

(2) to establish procedures for the development implementation of a site-specific comprehensive management plan for each designated special protection area; and

(3) to establish guidelines for Federal-State cooperation in the planning, funding, and implementation required to carry out the purposes of this section.

(d) PETITION FOR DESIGNATION OF SPECIAL PROTECTION AREA.—(1) Upon designation of a sole source area, pursuant to section 1424(e), any one or several municipalities within the sole source area may petition the Governor of the State in which the sole source area is located to apply for the designation of "special protection area" within such sole source area.

(2) Such petition shall propose boundaries for the special protection area and further shall evaluate whether—

(A) the proposed special protection area is a recharge zone for significant volumes of ground water with drinking water supply potential;

(B) the ground water which is recharged through the proposed special protection area is of high quality;

(C) portions within the sole source area are already contaminated with toxic organics, nutrients, salts, or other pollutants;

(D) maintenance of high quality in the ground water recharged through the proposed special protection area would have significant economic, social, and ecological benefits for the sole source area; and

(E) degradation of ground water recharged through the proposed special protection area would have significant economic, social, and ecological costs for the area.

(e) GOVERNOR'S APPROVAL.—Within one hundred and eighty days upon receipt of such petition, the Governor, considering the criteria set forth in paragraphs (A) through (E) of subsection (d)(2), shall approve or disapprove the petition. If the Governor approves such petition, he shall—

(1) propose the boundaries of the special protection area;

(2) designate or, if necessary, establish a planning entity to develop a comprehensive management plan (hereinafter referred to as the "plan") for the special protection area with adequate representation of municipalities to assure their participation throughout the planning process;

(3) establish technical and citizens advisory committees, hold hearings, and take other appropriate steps to assure and encourage public participation; and

(4) establish procedures for review, approval, and adoption of the plan pursuant to State law and offer assistance to municipalities and other public agencies with authority, pursuant to State law, to implement said plan.

(f) ENVIRONMENTAL PROTECTION AGENCY APPROVAL.—(1) Pursuant to approval of the petition as set forth in subsection (3), the Governor shall submit to the Administrator—

(A) proposed boundaries of the special protection area pursuant to subsection (e)(1); and

(B) a description of the planning entity and the technical and citizens advisory committees.

(2) Within sixty days, the Administrator shall approve or disapprove the Governor's proposed boundaries and the

designated planning entity pursuant to 1(A) and 1(B) of this subsection.

(3) The Administrator may approve the Governor's proposed boundaries and the designated planning entity if he finds that—

(A) said boundaries are based on the criteria set forth in paragraphs (A) through (E) of subsection (d)(2) of this section and the purposes of section 1424(e); and

(B) the planning entity has the authority, pursuant to State law, and the technical expertise to prepare the plan.

(4) If the Administrator disapproves either the Governor's proposed boundaries or the designated planning entity, he shall submit his reasons for disapproval to the Governor. The Governor may resubmit his request at his discretion.

(5) If the Administrator approves the Governor's proposed boundaries and the designated planning entity, he may provide to the State on a matching basis a grant of 50 per centum of the costs incurred in preparing the petition and developing the plan. The designated planning entity, through the Governor, shall be eligible for such planning funds for a period not to exceed two years.

(g) COMPREHENSIVE MANAGEMENT PLAN.—(1) The planning entity shall prepare a comprehensive management plan for the special protection area. Such plan shall be designed to maintain the quality of the ground water recharged through the special protection area through maintenance, to the maximum extent possible, of the natural vegetative and hydrogeological conditions. Such plan shall include but not be limited to—

(A) a determination of the quality of the existing ground water recharged through said special protection area and the natural recharge capabilities of the special protection area watershed;

(B) an identification of existing and potential point and nonpoint sources of ground water degradation, ground water flow patterns, and the relationship between surface water management and ground water recharge;

(C) recommendations for ground water quality standards designed to maintain existing ground water quality or improve existing ground water quality if prevailing conditions fail to meet drinking water standards, pursuant to this Act and State law;

(D) a map showing the detailed boundary of the special protection area;

(E) a resource assessment which suggests the amount, location, and type of human development and activity which the ecosystem can sustain while still maintaining existing ground and surface water quality and protecting unique ecological features related to maintenance of water quality;

(F) proposal of limits on Federal, State, and local government, financially assisted activities and projects which, directly or indirectly, may contribute, in any way whatsoever, to any degradation of such ground water or any loss of natural surface and subsurface infiltration or purification capability of the special protection area watershed;

(G) development of a comprehensive statement of land use management as it pertains to the maintenance and enhancement of ground water quality and quantity;

(H) proposal of limits on land uses in the special protection area which might have an adverse impact on water quality and/or recharge capabilities;

(I) consideration and proposal of specific techniques, including, but not limited to clustering, transfer of development rights, and other innovative measures sufficient to achieve the objectives of this section;

(J) consideration of the establishment of a State institution to facilitate and assist in funding a development transfer credit system;

(K) proposal to designate specific areas within the special protection area suitable and appropriate for public acquisition or fee or less than fee interests;

(L) a program for State and local implementation of the plan described in this subsection in a manner that will insure the continued, uniform, consistent protection of the special protection area in accord with the purposes of this section.

(2) During the development of the comprehensive management plan, the planning entity shall—

(A) consult with appropriate officials of any municipality or State or Federal agency which has jurisdiction over lands and waters within the area;

(B) transmit any draft and final plan to all appropriate municipalities for review and comment;

(C) consult with the officials of any municipality which has jurisdiction over lands and waters within areas delineated in accordance with subsection (f)(2)(B);

(D) consult with interested professional, scientific, and citizen organizations;

(E) consult with the technical and citizen advisory committees which shall be established by the Governor, and

(F) conduct public hearings, pursuant to State law, at places within the special protection area, and at such other places as may be appropriate, for the purpose of providing interested persons and municipalities with an opportunity to comment on any aspect of the plan.

(h) APPROVAL BY THE GOVERNOR.—Upon completion of the process set forth in subsection (g), the planning entity shall submit the plan to the Governor for review. The Governor shall approve or disapprove the plan. In his review of the plan, the Governor shall consider whether—

(1) the plan will achieve the stated water quality objectives of the plan and this section and protect the ecological value of the special protection area which may be significant to maintain water quality;

(2) the plan requires the exercise of land use and zoning measures to the greatest extent practicable to regulate the use of land and water resources in a manner consistent with the purposes of this section;

(3) the planning entity has afforded adequate opportunity, including public hearings, for public involvement in the preparation and review of the plan, and has considered such review and comment in the plan as submitted to him;

(4) written assurances have been received from appropriate municipalities that the recommended implementation program identified in the plan will be initiat-

ed within a reasonable time after the approval of the plan by the Administrator;

(5) the necessary authority and resources exist, pursuant to State law, to assure implementation of the plan at the State and local level; and

(6) a separate management entity should be designated or established, pursuant to State law, to implement the plan.

(i) ENVIRONMENTAL PROTECTION AGENCY APPROVAL.—(1) The Governor shall submit the plan, as approved pursuant to subsection (h), to the Administrator for review. Within one hundred and twenty days, the Administrator shall approve the plan or submit in writing to the Governor his reasons for not approving it. If approval is not given, the Governor will have ninety days to resubmit a modified plan to the Administrator. In his review, the Administrator shall consider the criteria set forth in subsection (g)(1), and after consultation with the Secretary of Defense, shall determine whether the national defense mission of military installations or related production facilities within, contiguous or adjacent to the special protection area have been adequately provided for.

(2) If the Administrator approves the plan, he may provide to the State on a matching basis a grant of 50 per centum of the costs of implementing certain features of the

plan including but not limited to land acquisition within the special protection area and a land credit exchange institution, pursuant to State law, but in no case shall the grant exceed $20,000,000.

(j) AUTHORIZATION.—(1) There are authorized to be appropriated to carry out subsections (e) and (g) for development of the plans, and pursuant to (f)(5), $10,000,000 for each of the years ending September 30, 1983; September 30, 1984; and September 30, 1985.

(2) There are authorized to be appropriated to implement the plans pursuant to (i)(2), $50,000,000 for each of the years ending September 30, 1984, September 30, 1985, and September 30, 1986.

(3) Funds authorized under this subsection shall only be used to implement the activities set forth in this section. No funds authorized in this subsection may be used to support activities authorized by the Clean Water Act, Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, and other sections of the Safe Drinking Water Act.

(k) DEFINITIONS.—For the purposes of this section:

(1) The term "plan" means the comprehensive management plan developed pursuant to subsection (g).

(2) The term "land credit exchange institution" is any institution established under State law to facilitate

the exchange, transfer, acquisition, and donation of development rights, conservation easements, or other partial interests in land.

(3) The term "recharge" means the downward flow of water to the water table through the soil overlying the aquifer.

SAFE DRINKING WATER

WEDNESDAY, MAY 19, 1982

U.S. SENATE, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,

Washington, D.C.

The subcommittee met, at 10:05 a.m., in room 4200, Dirksen Senate Office Building, Hon. Slade Gorton (chairman) presiding.

Present: Senators Gorton and Baucus.

Also present: Senator Moynihan.

OPENING STATEMENT OF HON. SLADE GORTON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator GORTON. Good morning. This is a hearing of the Subcommittee on Toxic Substances and Environmental Oversight, a subcommittee of the Senate Environment and Public Works Committee. The purpose of this hearing is to receive testimony regarding the Safe Drinking Water Act. Congressional authorization of the safe drinking water program administered by the Environmental Protection Agency expires on September 30, 1982. On May 11, the Environment and Public Works Committee reported a reauthorization bill to the full Senate. This bill contains monetary authorization for the 1983 drinking water program to enable continuation of the EPA's drinking water program. After these hearings on the Safe Drinking Water Act are completed, this subcommittee and the full committee will fully consider whether the Safe Drinking Water Act should be amended.

Maintaining safe drinking water for America's cities and communities is an important and appropriate purpose for Federal regulatory activity. Yet this year, drinking water quality has been obscured by important congressional consideration of clean air and hazardous wastes.

On November 18, 1981, I introduced S. 1866, the Safe Drinking Water Regulatory Reform Act, which, if adopted, would make several changes in the substance of the Safe Drinking Water Act. As I stated on the day the bill was introduced, it was my intention that the bill serve as a vehicle for raising the key substantive issues of the Drinking Water Act. This hearing today, and the next which we will hold on May 26, will be conducted for the same purpose. I believe that thoughtful discussion of the salient provisions of the Drinking Water Act will guide this committee to appropriate amendments which can be made in the context of reauthorization of the Safe Drinking Water Act.

On February 23, 1982, Senator Moynihan introduced S. 2131, a bill which proposes amendments to that portion of the Safe Drinking Water Act relating to sole source aquifers. I joined him as a cosponsor. I did so because I felt that S. 2131, like S. 1866, raised issues which were worthy of discussion before this subcommittee.

I will not address the merits of the proposals made by either bill at this time. It is my intention to await the completion of these hearings before defining my position on how the Safe Drinking Water Act should be amended.

Before I call on our first witness, I want to welcome the ranking member of the subcommittee, Senator Baucus, and ask whether he has an opening statement.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Mr. Chairman.

I join Senator Gorton in welcoming the witnesses and their views on the Safe Drinking Water Act and its implementation. When the subcommittee held a hearing on this subject in March, several issues emerged which merit careful scrutiny. Diversity of opinions were offered as to what changes, both statutory and administrative, may be required to improve the performance of the program.

Before the subcommittee recommends any major revisions to the Drinking Water Act, it is necessary to have a thorough understanding of the problems in order to determine the best method by which to remedy them. I look forward to continuing the hearing process to further formulate a sound and balanced base from which to evaluate proposed changes in the act.

The witnesses who have come to testify today bring with them a variety of experience and expertise in working with the Drinking Water program, including a former EPA Assistant Administrator who served when key regulatory decisions and implementation efforts were being made. Additionally, I look forward to hearing comments on the bill I have cosponsored, the Sole Source Aquifer Protection Act. I believe this measure represents an important step toward adopting a Federal policy toward protecting our ground water supplies. I welcome the opportunity to further explore these issues with witnesses today.

Senator GORTON. Senator Moynihan is expected shortly. We have his statement and it will be inserted at this point in the record.

OPENING STATEMENT OF HON. DANIEL PATRICK MOYNIHAN, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator MOYNIHAN. I thank the distinguished chairman, Senator Slade Gorton, for permitting me to attend this morning's hearing of the Toxic Substances and Environmental Oversight Subcommittee. Although I am not a member of the subcommittee, I am keenly interested in the views of today's witnesses on the Sole Source Aquifer Protection Act, S. 2131. It is, of course, an honor to have Senator Gorton as a cosponsor of the bill along with my friend from Montana, Senator Baucus and the ranking minority member of our committee, Senator Randolph.

Contamination of underground drinking water is a New York problem. It has also plagued Florida, California, New Jersey, Massachusetts, Washington, Indiana, Missouri, Wisconsin, and Tennessee. Indeed, every State in the Union has been afflicted by contamination of underground water supplies. And the potential of contamination increases by the day.

EPA estimates there are over 176,000 industrial, municipal, and agricultural waste lagoons, 100,000 abandoned industrial waste sites, and 75,000 active industrial landfills. Tens of thousands of these sites are unlined and lie directly above ground water supplies.

Protection of our underground drinking water supplies should not be left to chance. Over one-half of the population of the Nation depends on ground water for its drinking water source. Many of these communities have no other water supply save ground water. According to the Council on Environmental Quality, "* * * ground water is difficult to understand and easy to forget. Ignorance has led to abuse and abuse to endangerment of critical supplies * * *."

Federal involvement in controlling ground water contamination has been haphazard at best. The Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, and the Superfund legislation all have provisions that affect ground water quality but none was written specifically for that purpose. Although management of ground water supplies has been and should continue to be solely within the local or State domain, the Federal Government, nonetheless, has a critical role to play in protecting underground water supplies from further contamination.

It is for this reason that on February 23, 1982, I introduced the Sole Source Aquifer Protection Act, S. 2131. The bill establishes an institutional framework for Federal, State, and local cooperation in developing and implementing long-term plans for ground water protection.

S. 2131 adopts a preventive approach toward underground drinking water contamination. The bill applies to all areas that have already been designated by the Environmental Protection Agency as sole source aquifers, according to the terms of section 1424(e) of the Safe Drinking Water Act. Underground supplies that provide the only source of drinking water to a community are known as sole source aquifers.

Specifically, the bill establishes a program for the protection of recharge zones of sole source aquifers. Most of the rainfall replenishing the supply of the underground reservoirs passes through the recharge zone.

Under the terms of S. 2131, the initiative to protect ground water supplies must come from the local level. The Federal Government will not mandate participation in the aquifer protection program. The bill does not involve the Federal Government in local and use decisions. EPA is involved to provide technical guidance, national consistency, and limited financial assistance in the protection of drinking water supply. Planning and implementation funds from the Federal Government, provided by S. 2131, must be matched on a one-for-one basis with State or local funds.

Prevention of contamination is the only rational course of action that the Federal Government can encourage State and local governments to take. We court disaster if we continue to talk about ground water contamination and then fail to act to prevent it. The Sole Source Aquifer Protection Act proposes a modest Federal effort by the standards of other Federal environmental laws. But its intent is no less serious: To establish the principle that the drinking water of half the Nation is worth protecting.

I look forward to the testimony of our witnesses and again wish to thank the chairman of the subcommittee, Senator Gorton, and the ranking minority member, Senator Baucus for scheduling this hearing on the sole source aquifer bill.

Senator GORTON. At this point I should like to welcome as our first witness Dr. Robert Neal, chairman of the National Drinking Water Advisory Council. Dr. Neal.

STATEMENT OF ROBERT NEAL, CHAIRMAN, NATIONAL DRINKING WATER ADVISORY COUNCIL

Dr. NEAL. Good morning. My name is Robert Neal. I am by profession a toxicologist, but I appear before you today in my capacity as the current Chairman of the National Drinking Water Adivsory Council. As you know, the Council is established by the Safe Drinking Water Act and serves to advise the Administrator of EPA on various aspects of the administration of the act.

At the March 24–25, 1982, meeting of the Council, we conducted an extensive review of the Safe Drinking Water Act. At this meeting we examined the public comments solicited by EPA relative to reauthorization of the act. We also examined proposed changes in the act contained in bills before Houses of Congress. As a result of this review, the National Drinking Water Advisory Council has made a number of recommendations relative to specific issues concerning the reauthorization of the act, and at this time I would like to summarize some of these recommendations.

A key issue in the reauthorization of the act is the requirement for public notification of violations of the maximum contaminant levels—MCL's—testing procedures, treatment techniques, special monitoring requirements and failure to comply with a variance or exemption compliance scheduled. The Council discussed whether the current statute should be changed to modify the circumstances under which public notice was to be given. As a result of these discussions, the Council recommends that the act be modified to allow EPA to distinguish, by regulation, public notification requirements for minor and intermittent violations from those required for health related and persistent violations. In addition, the Council recommends the elimination of the requirement for specific modes of public notification, allowing the mode of notification to be determined through regulation and with greater variation than is currently allowed.

Another issue discussed by the Council was whether specific provisions should be made in the act which would allow flexibility in applying certain MCL or monitoring requirements. Examples of the need for flexibility in applying MCL's would be that in prisons housing only adults there would be no need to control nitrates since the MCL for nitrate is meant predominantly for protection of infant population. Another example would be MCL's for fluorides in nursing homes. The fluoride MCL was meant to prevent malformed teeth in children. An example of needed flexibility in monitoring is where a naturally occurring contaminant in water has never been detected in a particular system. The Council believes there should be flexibility in requirements for monitoring and flexibility of MCL's. As an additional part of this recommendation, the Council also strongly support the practice of issuance of health advisories by EPA—previously known as suggested adverse effect levels or snarls—as a critical aspect of providing protection to the public on a short-term or interim basis for unregulated contaminants. However, the Council strongly recommends that in the issuance of health advisories, the EPA should arrange for an increased level of scientific review of these advisories.

On the subject of variances and exemptions, the Safe Drinking Water Act requires all MCL's be the same for all systems regardless of size. Yet, treatment technologies to attain these MCL's, which are easily affordable by large systems, may be an impossible burden for smaller systems. As a result of its discussions, the Council recommends that the Safe Drinking Water Act provide for economic variances and also allow greater flexibility to the States to apply various criteria on a case-by-case basis. In addition, the Council believes it should be the responsibility of EPA to determine the treatment methods which must be considered when contemplating a variance. However, it is important, we think, that EPA not preclude the State from requiring or accepting an alternative treatment method which would bring a system into compliance.

Another question which was the subject of Council discussion was the burden of proof concerning potential adverse health effects that EPA believes is necessary to promulgate new regulations to control a particular contaminant. The current language in the Safe Drinking Water Act authorizes the Administrator to regulate "contaminants which in the judgment of the Administrator may have any adverse effect on the health of persons, taking costs into consideration." The Council believes this language is unduly ambiguous and recommends a change in the language to the following: That the Safe Drinking Water Act "provide authority to regulate levels of exposure to contaminants which in the judgment of the Administrator pose an unacceptable level of risk to the public health based on sound scientific information on the nature of the risk and taking costs into consideration."

The Senate bill 1866 proposes requiring the Administrator of EPA to undertake benefit-cost analysis as part of the rulemaking process. The Council recommends that the language of the Senate bill be adopted, incorporating a requirement for cost-benefit analysis in the Safe Drinking Water Act.

The Senate bill also proposes that the act be amended to delete the Administrator's authority to require a specific type of technology for use in the treatment of drinking water to remove contaminants potentially hazardous to human health. As regards this issue, the Council is of the opinion the EPA should make every effort to establish MCL's for regulation of contaminants when possible. If this is not possible, we believe the EPA should prescribe a variety of appropriate and acceptable technologies to control these contaminants. Further, the States, in applying these technologies, should have the flexibility of applying other technologies which they can show accomplishes a comparable effect. We recommend changes in the act to insure the application of these policies.

The Senate bill also proposes incorporating a series of rulemaking procedures in the reauthorization of the act, including those currently stated in the Clean Air Act, judicial review of rulemaking in the court of appeal's where the impact of the regulation occurs or in the D.C. courts; opportunity for cross-examination during rulemaking procedures; requirements for the Administrator to consult with the Secretary of HHS and the National Drinking Water Advisory Council in regard to rulemaking; and raising the judicial test of the Administrator's rulemaking judgment from the "arbitrary and capricious" test to the "substantial evidence" test. On examination of these proposed rulemaking procedures, the majority of the Council is in agreement that the Safe Drinking Water Act be amended to include those rulemaking procedures currently in the Clean Air Act; that judicial review of rulemaking occur in the court of appeals where the impact of the regulation occurs or in the D.C. courts. We are not in agreement with cross-examination on the part of the public during hearings on regulations. We do agree that the Administrator should consult the Secretary of HHS and the National Drinking Water Advisory Council relative to rulemaking. Finally, the Council does not support the raising of the judicial test for rulemaking to "substantial evidence."

The Senate bill 1866 proposes that the membership of the National Drinking Water Advisory Council be expanded and the composition of the membership be changed. The majority of the Council recommends no changes be made in the Safe Drinking Water Act provisions establishing the National Drinking Water Advisory Council. The majority of the Council felt that the current act provides EPA sufficient flexibility in appointing an appropriate range of people in the disciplines and with the perspectives necessary to provide needed advice to the Administrator.

The Council also discussed whether the Safe Drinking Water Act provisions to designate sole source aquifers should be retained, eliminated, or significantly changed. The Council has no recommendation concerning the sole source aquifer program at this time. Since the Agency is now considering a major policy statement on ground water protection, the Council believes it should wait until that statement appears before making any recommendations.

Finally, the Council also discussed the issue of timing of the issuance of the revised primary drinking water regulations. After considering a number of ramifications of this issue, the Council recommends that the act be revised to allow the EPA to propose recommended maximum concentration limits—RMCL's—at the same time they propose related MCL's, rather than as separate rulemaking actions as required by the existing regulation.

Thank you.

Senator GORTON. Thank you, Dr. Neal.

Section 1412(f)(b)(1)(B) requires the Administrator of the EPA to establish recommended maximum contaminant levels for each contaminant which may have any adverse effect on the health of persons, in the precise words of that statute. Pursuant to that authority, the Administrator promulgated interim maximum contaminant levels now published in title 40, CFR part 14. S. 1866 proposes that that subsection be amended to require the Administrator establish maximum contaminant levels for each contaminant "which may pose an unreasonable risk to the health of persons." In your opinion, do any of the contaminants for which interim maximum contaminant levels have been established have the potential to adversely affect the health of persons but fail to pose an unreasonable risk to the health of persons? In other words, is there a difference in connection with those items which have already been designated?

Dr. NEAL. In my profession as a toxicologist, the term "unreasonable risk" is not a term that we use. The term "acceptable risk" is one we are more familiar with. And in the Council's recommended change in the language of the act to set the basis for which we think regulation is required we use the term "unacceptable level of risk," considering the scientific data that backs up that perception of unacceptable risk. I think clearly there is a potential of contamination of drinking water with substances which do have the potential for adverse health risks. I think setting the levels is clearly a desirable activity, a necessary activity.

Senator GORTON. I am not sure from that that I get whether or not you feel there is a substantive difference between the two proposals and what substantive change or difference you would have in this definition.

Dr. NEAL. I think the only substantive difference is we would like to include the language and I think I will quote exactly: "based on sound scientific information on the nature of the risk and taking costs into consideration." We substituted the word "unaccepted" for "unreasonable." But we would particularly like to see inclusion of the language "based on sound scientific information."

Senator GORTON. Assuming that we changed it in the fashion which you outline, in essence changing the word "unreasonable" to "unacceptable," would there then be a substantive difference between that and the present statute which would have any impact on any of the chemicals for which MCL's have been set?

Dr. NEAL. There may in fact be. For example, the trihalomethane regulation was based mainly on attainable control more than it was on a sound scientific evaluation of the potential health risks from trihalomethanes. So I think this proposed language may in fact have some effect on current MCL's and would require a reevaluation of them in terms of what is the health risk posed. What should MCL's be based on? Sound scientific information.

Senator GORTON. Do you feel that the Administrator of EPA is in an advantageous position to evaluate whether a particular treatment technology is more effective both in terms of regulated ease and cost of implementation and the monitoring of individual contaminants as against the water suppliers themselves?

Dr. NEAL. Well, I think in fact the water suppliers probably have equal or perhaps greater technical knowledge of water treatment technologies relative to a particular contaminant, but I think there is some merit in some central direction for acceptable treatment technologies, some guidance over what are an acceptable group of treatment technologies. But, as the Council believes, some flexibility in applying treatment technologies in accomplishing the same purpose ought to be allowed. We think it is in fact the responsibility of EPA to stipulate acceptable treatment technologies—and we say technologies because we think that in treatment to remove a particular contaminant there is more than one technolgy available to accomplish that.

Senator GORTON. Within the recognition of those technologies, to allow the individual company to make its choice?

Dr. NEAL. Yes, or to substitute other technologies that will accomplish the same result if, in fact, they can show it brings about a comparable effect. Although the EPA may specify certain technologies, if there is another technology that could accomplish the same result, some flexibility is needed.

Senator GORTON. That would be a shift to control and choice and the availability on the part of companies not in the present law.

Dr. NEAL. Yes, we think that is important.

Senator GORTON. Senator Baucus, I have a couple more questions, but go ahead.

Senator BAUCUS. Go ahead. You are rolling, so keep moving.

Senator GORTON. You do state that the Council is interested in providing relief for at least some of the smaller water systems. How do you feel about providing monitoring relief to smaller systems for selected contaminants if it can be shown that the particular contaminant is not found in the drinking water or is found in extremely low levels, too low to provide any health hazard?

Dr. NEAL. Yes; we in fact think for that specific example where a contaminant that has never been found in a drinking water supply, some relief of monitoring for that paritcular contaminant ought to be allowed in small and large systems.

Senator GORTON. Do you feel that that requires a change in the statute?

Dr. NEAL. Yes.

Senator GORTON. EPA already considers costs, obviously, while it is proposing new standards. How, in your view, would a requirement for a formal cost-benefit analysis change the process which the agency already undertakes? How would this analysis increase support for any new standards which EPA might promulgate?

Dr. NEAL. I think in fact EPA has in the past in promulgating regulations considered cost. I think this will formalize it to a greater degree and perhaps make some small change, but I don't think an appreciable change. I think they have practiced cost-benefit analysis in the past. I know in the primary drinking water regulations cost considerations were taken into account.

Senator GORTON. So it is more for a purpose of clarity than creating a profound change in EPA methodology.

Dr. NEAL. Yes.

Senator GORTON. You stated the present language of the act about the health basis of the standards is, and I quote: "unduly ambiguous." Other than simply cleaning up the language, has this ambiguity caused harm to anyone, and if so, to whom?

Dr. NEAL. No; I think it has not caused harm to anyone but I think it has made the administration of the act difficult to accomplish because of the ambiguity of the statement of "any adverse effect." We think that the change to an "unacceptable level of risk based on sound scientific information" would in fact clarify that issue and simplify the administration of the act on the part of the Administrator.

Senator GORTON. Even though there is no harm which you can define precisely coming from the present language, this would make administration easier in the future and prevent same future adverse consequences?

Dr. NEAL. Yes; I think in fact that ambiguity may in fact slow down the administration of the act or application of the act to issues where the act needs to be applied.

Senator GORTON. Thank you.

Senator Baucus?

Senator BAUCUS. Thank you, Mr. Chairman.

Dr. Neal, why do you propose greater regional flexibility? You say there are regional differences around the country and different communities face different circumstances. Why greater flexibility?

Dr. NEAL. Well, in fact the cost of monitoring and the cost of meeting MCL's is not a trivial matter that in fact if flexibility can be built into the system where the cost of compliance can be reduced I think that is highly to be desired.

Senator BAUCUS. In addition to cost, do you think that the net result in communities that have greater flexibility will be a greater, same as, or less protection for the community? Will the water be cleaner or less clean?

Dr. NEAL. I think it will not change greatly. I think the cost of attaining compliance will be reduced, but I think there will not be appreciable change which will lead to increased risk.

Senator BAUCUS. What evidence do you have for that?

Dr. NEAL. I guess the same evidence you have there will be an increased risk. I think it is only a perception.

Senator BAUCUS. I didn't say that. I am asking what your evidence is for the same level of protection.

Dr. NEAL. I think it has to be based on a perception of what the act is about, what is the nature of the requirements for meeting MCL's and treatment technologies, applicability of what in fact are the particular MCL's meant for—is it meant for an adult population, a juvenile population, or both? What are these contaminants? How often do they occur? I think an overall perception of these factors would suggest increased flexibility is to be desired.

Senator BAUCUS. Do you have any evidence that the result would be the same protection we now have?

Dr. NEAL. No, I don't have firm evidence.

Senator BAUCUS. That is an opinion?

Dr. NEAL. That is an opinion.

Senator BAUCUS. I see.

In your testimony you discuss a change in the burden of proof concerning potential adverse health effects. My question really goes to what is the difference between "may have any adverse effect on the health of persons" compared with your proposed definition that the act "provide authority to regulate levels of exposure to contaminants which in the judgment of the Administrator pose an unacceptable level of risk to public health?"

Dr. NEAL. Yes. I think the key to the Council's recommendation is the phrase which says, "based on sound scientific information on the nature of risk." That is the key change that we are suggesting, that the evaulation be based on sound scientific information on the nature of risk.

Senator **Baucus**. I hear that, but the question is even after we have the sound scientific data there has to be subjective judgment here,. someone is going to have to decide, I guess the Administrator, whether there is an unacceptable level or risk to the public health. What is unacceptable?

Dr. **Neal**. In terms of health risk assessment in the scientific community, the terms "acceptable risk" or "unacceptable risk" is probably the most currently used terminology. So I think our preference for that terminology reflects more the scientific input on the part of the Council than perhaps the more legalistic language.

Senator **Baucus**. But again, there can be differences of opinion, I would guess, as to what is acceptable and what is unacceptable.

Dr. **Neal**. Yes.

Senator **Baucus**. How do we know what is acceptable or unacceptable? Do we give it to the Administrator and say: "Toss a coin," or it depends on what side of bed she gets out of that morning?

Dr. **Neal**. I think there is a perception in the public, the scientific community, and regulatory agencies that a one in a million lifetime risk is an acceptable risk for exposure to a carcinogen. That judgment has been made by regulatory agencies relative to carcinogens. A hundredfold safety factor relative to organ systems damage from exposure to compounds as determined in animals is usually considered an acceptable level of risk, and the compounds have been and are being regulated on that basis.

Senator **Baucus**. I am sorry, I missed that. What is an acceptable level or risk?

Dr. **Neal**. I was just giving some examples.

Senator **Baucus**. I missed the example.

Dr. **Neal**. It has been a longstanding practice on the part of regulatory agencies if you have an inhibition of an enzyme, for example, an esterase, as a result of experimental animals to a compound, and human exposure to that compound was a hundredfold less than that level that you could not see in effect in animals, that was considered to be an acceptable level of exposure. So that way of determining what is acceptable risk is being applied in the regulatory agencies and the scientific communities in evaluation of potential risk of substances to which humans may be exposed.

Senator **Baucus**. I think Senator Gorton has asked what is the substantive effect between the two standards, and I missed your answer. Could you tell me that again please, what you expect the substantive difference to be?

Dr. **Neal**. By this change in language?

Senator **Baucus**. That is right.

Dr. **Neal**. I think in fact by requiring the Administrator to base decisions on sound scientific information and then deciding what is an acceptable or unacceptable levels of risk, I think we may spend less time dealing with issues that are not of concern to public health and more time with those issues that really do have public health concern.

Senator **Baucus**. Could you give me an example?

Dr. **Neal**. I would think as far as I am concerned—this is a personal example, not speaking for the Council—but I think dealing more effectively with lead in drinking water and less time spent on chasing the specter of carcinogenic properties of substances that appear in water.

Senator BAUCUS. If I understand you correctly, with the proposed language more effort would be undertaken to determine lead levels rather than carcinogens?

Dr. NEAL. I think there is a substantial body of scientific data available where one can make some judgments relative to that issue, whereas the scientific data is not available concerning risk posed by exposure to small amounts of carcinogenic chemicals in water.

Senator BAUCUS. I don't understand why a greater effort of the proposed standard will necessarily lead to a greater effort into real problems rather than potential or assumed problems. Why, by definition, or why if we have the proposed standard will we be spending our efforts where we should be, that is, tracking down actual contaminants rather than wasting our time?

Dr. NEAL. Well, the contaminants are there. The key issue is whether the scientific data is available to make the assessment whether the risk is acceptable.

Senator BAUCUS. You say it is because of the last words of the proposal—based on sound scientific information?

Dr. NEAL. Yes.

Senator BAUCUS. OK, thank you.

Senator GORTON. Thank you very much, Dr. Neal. We appreciate your being here.

Mr. Jorling, our next witness, recognizes better, perhaps, than most people here what is going on. We will now take a short break to go and vote.

We will recess for probably 10 to 20 minutes.

[Brief recess.]

Senator GORTON. Mr. Jorling, you may proceed.

STATEMENT OF THOMAS C. JORLING, DIRECTOR, CENTER FOR ENVIRONMENTAL STUDIES, WILLIAMS COLLEGE

Mr. JORLING. Thank you, Mr. Chairman. I will try and summarize my statement.

I am pleased to be here to contribute to your review of the Safe Drinking Water Act and to comment specifically on proposed amendments contained in S. 1866. As you know, as Assistant Administrator of EPA for 2½ years, from 1977 to 1979, under the leadership of Administrator Doug Costle, I was responsible for the implementation of the Safe Drinking Water Act. I am presently professor of environmental studies and director of the Center for Environmental Studies at Williams College in Massachusetts.

I am going to confine my remarks to two core issues raised by the proposed amendments, the first dealing with the statutory language controlling the promulgation of drinking water standards, and the second dealing with the authority granted to the Administrator under existing law to establish under certain conditions treatment technique requirements to protect public water supplies.

The current Safe Drinking Water Act is in accordance with that preventative principle, a sound and established principle of public health protection. The proposed amendments in the two areas I will address would seriously erode that principle. And I must say I find it surprising and perflexing that such weakening changes are proposed in a statute governing a route of exposure to chemicals that is so direct and unavoidable.

If I might start with a few general observations which are necessary to set a context prior to discussing the two specific areas. Statutes establishing fundamental directions in public and environmental health protection should be changed only when significant evidence is presented that such change is appropriate. I believe any fair characterization of the proposed amendments is that they would weaken public health protection. My own view is that they would so weaken the statute so as to call into question the efficacy of having any statute at all. But I will attempt to make that case in the context of the two specific areas below.

There is to my knowledge no—and I emphasize no—evidence that the present statute either in its terms or in its implementation, or in its possible implementation, is causing any undue hardship. I do not believe any case has been made that the current language of the statute—which is fully in accord with sound public health principles—is operating in a manner inconsistent with the public interest.

The committee must make that fundamental assessment, and, if it can't, as I cannot, find evidence that the present language is wrong or operating to such an adverse effect on public interest, it should not tamper with it. Among other results, tampering will bring new uncertainty, new rulemaking, new litigation, all of which, at the very minimum, operate to place the public at increased risk.

My own view of the statute is that it is sound, but that its implementation has been poor. And in saying that I am fully aware that I am necessarily criticizing my own performance as an official responsible for implementation. I believe the act has not fulfilled its promise to the American people and, rather than proposing weakening amendments, I think the committee should be demanding that the present language be implemented fully to protect the people. Synthetic organic chemicals, especially, have not been addressed in the current implementation of the law. Such chemicals are present in many drinking water supplies, often in large numbers—that is, many different chemicals—as well as in significant concentrations. It was a failure of my administration; it continues to be a failure.

Now let me turn to the two major amendments. The terms of the first of the amendments and related conforming amendments would change the basic test from one where the Administrator is to act when he or she determines a contaminant may have an adverse effect on the public health of persons to a measure that would authorize action only when a contaminant poses an unreasonable risk to the health of persons. On its face this may appear to be mere semantics. It is not. It not only changes the mandate to the Administrator, it also delegates to the executive, I believe improperly and unwisely, the fundamental determination of what is unreasonable risk. Let us look at those two elements, risk and unreasonable, in turn. Existing law states that when a contaminant is determined to

5

be of a potential to cause adverse effect on the health of persons, actions which are technically and economically feasible should be taken to prevent harm.

And I should point out that while many synthetic organic chemicals found in public water supplies meet that test none have been subject yet to protective standards under this act. That fact should cause the committee concern. Perhaps the statute should be made stronger—not less strong.

The proposed amendment would not allow preventative action to be taken on that basis. Rather, not only must actual quantitative risk be established, it further must be unreasonable. Let us look at this carefully. First, what does pose a risk mean? The change is intended to make it more difficult for the Administrator to act. Instead of examining the potential for harm—or adverse effect—of the chemical, the Administrator would be required, notwithstanding likelihood of causing harm, to determine that it does cause harm, presumably only after gathering empirical cause-effect evidence, before acting and then act only if that harm is unreasonable. Among other results this would represent a policy of establishing the American people as a population of experimental animals. Only when such hard evidence of death could be established could the next step be taken still prior to protective action and that is the determination that the established risk is unreasonable.

And what does unreasonable mean? In practice it means methods will be developed to quantify the risk, generally in terms of excess deaths and then some official makes the determination how many such deaths are unreasonable. That represents a fundamental shift in our Nation's traditional treatment of the value of human life. It represents a fundamental shift in public health protection. If Congress makes the judgment that it wishes to delegate such fundamental decisionmaking power to the executive, I recommend that it do so only—and I stress only—after it states what number of deaths per thousand or million population Congress believes are reasonable. If Congress does not, the executive will increasingly make those judgments by adding to the risk analysis, a benefit-cost analysis in which not only will the reasonableness of a death rate be determined, but an explicit value will be put on human life, a value derived by costing the investment in saving a life and comparing those costs with the benefits of saving life. And again, let me remind you, the representatives of the people, these methodologies and determinations will be made by officials in the executive branch. I have stated my view of this delegation in an oped page piece in the Boston Globe which I have appended to my statement.

Such a fundamental shift should be made, if at all, only on the most compelling of evidence. I don't believe that the evidence has been supplied to you. In my view it does not exist—certainly not in the case of protection of the Nation's drinking water.

In 1974, Congress recognized, by the character of the authority granted, some of the inherent complexity in establishing safe drinking water standards, especially as it applies to synthetic organic chemicals. These complicating factors include the difficulties associated with the nature of the methods for detection and analysis of particularly organic chemicals; difficulties presented by the existence of thousands of such chemicals; difficulties presented by the possible presence in a drinking water source of many such chemicals with possible, almost unknowable, so-called synergistic effects; and by the inherent difficulties in ascribing a specific level of safety for each such contaminant when, among other reasons, so many confounding routes of exposure exist, especially in urban areas. The Congress response to this complexity was to authorize the Administrator to impose in the alternative to, or in conjunction with maximum contaminent levels—MCL's—treatment techniques or a methodology that would remove, to the extent technically and economically feasible, a broad array of chemicals. I do not believe anything has changed since that judgment was made. And while EPA proposed a treatment technique regulation for organics in 1978, that proposal has never been finalized. Deleting the authority to set treatment standards could be justified only if there was an alternative mechanism that was as efficacious, or it could be shown that such authority wasn't necessary. Neither of those situations prevail.

The contamination of public drinking water supplies is a growing, not diminishing, problem. Attention is most frequently focused on contaminated groundwater as a result of releases of hazardous waste. Surface water supplies continue to be subject to contamination, especially by synthetic organic chemicals. The administration has put the BAT toxic water pollution control program on hold, or worse. The hazardous waste program under RCRA is a quagmire of uncertainty. Last month in Massachusetts an official of a leading hazardous waste management firm, the IT Corp. of Wilmington, Calif., said EPA's proposed actions on hazardous waste would create a swamp of hazardous waste. Pretreatment programs have ground to a halt. Pesticide controls both at the manufacturing and the operational/field application end have been weakened or rendered nonexistent. The controls expected under TSCA have not been applied. And this failure to control the release of chemicals into the environment is taking place against a backdrop of an unprecedented chemical revolution. The figures should be familiar to you. As recently as 1930 synthetic organic chemical production in the United States was measured in quantities of a few hundred thousand pounds of total production annually. Now the U.S. production of such chemicals is over 300 billion pounds annually. The implications are obvious to mere commonsense: Even with rigorous controls huge amounts of chemicals will be released to the environment as byproduct waste or carelessness, or as a disposal following use. Without controls the problems are simply horrendous. We can manage chemicals in a way to enjoy their benefits and prevent either short-term or long-term release to the environment and consequent exposure to humans. The Safe Drinking Water Act is an essential link in that management structure. It should not be weakened. Its implementation should be strengthened.

I want to repeat my basic theme. Change statutes only when there is clear and compelling evidence change is necessary in the public interest. The performance of environmental and health protection programs can only be delivered and delivered economically and reasonably if there is stability and credibility in their operation. Rapid change without compelling evidence weakens resolve, weakens respect for law, and also produces delay and confusion, and often ultimately transfers the establishment of public policy to the courts. The Safe Drinking Water Act as currently written accommodates economic and social impacts. I don't believe there is any need for change in either the basic mandate to set standards or in the authority to establish treatment techniques.

Mr. Chairman, that completes my testimony and I will be happy to answer any questions.

Senator GORTON. Mr. Jorling, do you have any figures or any estimates as to how many deaths are caused per year by unsafe drinking water at the present time or before the act was passed?

Mr. JORLING. Mr. Chairman, you have asked a question that we asked several times when I was Assistant Administrator. My answer is going to have several parts. One answer is that the fact that we don't have that kind of empirical information printed out on a computer is evidence of the failure of drinking water suppliers and water pollution control officials to monitor the broad array of chemicals present in drinking water. It also reflects a disappointing performance in research and epidemiology and other studies such as indirect animal studies on the broad array of chemicals that need to be studied in order to come up with the quantitative estimates you have asked about.

There are several reports that have been issued—I cannot recall the names of them off the top of my head but EPA could provide them for the record—which have ranges of estimates on health effects, primarily increased deaths due to cancer, that are caused by consumption of drinking water. Those estimates, if I remember correctly, range from the hundreds to 500 per year.

Senator GORTON. You state implementation of the act has been poor specifically in regard to synthetic organic chemicals. Why is that? What can we do to improve it?

Mr. JORLING. Mr. Chairman, my basic statement reflects the fact that most of the contaminents in drinking water are totally unregulated. The only chemicals that are regulated are those which basically began the regulatory process back in the Public Health Service days and were codified as the interim standards in 1975 after the enactment of the Safe Drinking Water Act. But the great bulk of materials that are contaminating drinking water are unregulated. So it is specifically that fact; that it is an unregulated situation. That is what stands behind my characterization of poor implementation.

The second feature of poor implementation, which I am responsible for, at least accountable for, is that during that time we published the proposed treatment standard regulation we were unable to promulgate it in any form before I left office. I believe after looking through the hearing record, and serving as hearing officer on many of the public hearings held on that proposal, that it was sound. There were some adjustments that were necessary as a result of the hearing record, but the basic premise of the proposal was sound; specifically that granular activated carbon is a sound technology and it is available and that it does do the tasks which it is designed to do, and that is to remove or at least abate significantly a broad array of synthetic organic chemicals. So I felt that regulation should have been promulgated. The fact it wasn't was a poor performance on my part, and I believe continues to be a poor performance on the part of the Agency.

Senator GORTON. Is it your view if adequate standards are not set and directly enforced by EPA that both the privately owned water companies and publicly owned utilities will be indifferent to health hazards caused by drinking water?

Mr. JORLING. One of the issues I struggled with was why there was opposition by the utilities to the regulation. The utilities of this country have done a marvelous job and deserve tremendous credit in making our water free from pathogens. But here we are not dealing with pathogens, we are dealing with a possible broad array of possible chemcial contamination. Why utility officials oppose regulation mystifies me. Some officials are concerned. I remember distinctly the person who ran the Washington metropolitan drinking water system did support the regulation very strongly. But by and large most of the utilities were opposed. I don't think it is an indifference as much as it is a lack of appreciation for the type of threat, which is a different type of threat than that which they were associated with at the turn of the century; namely, the pathogenic exposures in drinking water. So I don't want to characterize them as indifferent. In need of education is perhaps a better characterization.

Senator GORTON. You spend a good deal of your written testimony in staking out a position that is quite different from most of the other witnesses, most of whom felt that the difference in the proposed change in standard either to unreasonable risk or unacceptable risk was a change in form rather than in substance. You seem to think that it was the very substance, and very substantial lessening. Do you think in fact that if the S. 1866 test or the proposal to change the word "unreasonable" to "unacceptable" were put into the act that there would be a different kind of performance, that different chemicals would be controlled at a different level by EPA?

Mr. JORLING. Mr. Chairman, I do, and I do for a couple of reasons. First, history. If the committee was considering de novo a statute designed to regulate drinking water and was considering adoption of the several different forms of language, it is possible that there would not be a nickel's worth of difference in which one was chosen. But that is not the situation we are in. We are in a situation where Congress enacted with a statute, with a choice of words, and that that choice now has been the operative language both in regulatory procedures and in litigation. There is now an effort to amend. That effort to amend has some purpose—specifically it is to weaken the statutory standard. That intention would not be ignored by a court reviewing what the purpose of that change was. So that that history means that the interpretation would be different. Congress, as the rule of thumb is, and as you well know in your service as attorney general, does not act without a purpose, at least in the eyes of the court. So it would read that difference with that purpose or intention in mind.

Second, I do believe there is a fundamental difference in the two standards. The existing law is preventative in its orientation in the sense the focus is on the character of the contaminant, and if a judgment is made that that contaminant is a material that could cause harm, then actions which are economical and feasible are to be taken. The tense of the proposed change and including, as I understood, Mr. Neal's testimony, is that you wait until you see whether in fact any risk is borne by the public before you act, and then you only act if that risk is unreasonable, so that you await accumulation of real evidence before you act. I think that is a fundamental difference and one that, again because it would be tested in courts, would result in changed behavior by the Agency.

The third element of an answer would be—and this one comes from my experience as an administrator—it is very difficult to act in the executive branch. Taking legislation through to implementation, as I testified to this committee on several occasions, normally takes now 4 years. Part of that delay results from the multiple interpretations and judgments as to what the actual language means.

As I said earlier, this is still an unregulated field. If the statutory base changed now, and the fact the great bulk of chemicals are unregulated, it would lead to another extended period of basically no action on the part of the executive branch. And I think for just simply the delay phenomenon that accompanies changes in legislation that it should be avoided, especially where the level of evidence supporting a need for change, in my judgment, is so weak.

Senator GORTON. Mr. Jorling, I thank you very much for you cogent and helpful testimony. We really appreciate it.

Mr. JORLING. Thank you.

Senator GORTON. Our next witnesses will be Mr. Tripp and Ms. Warren.

Mr. Tripp, you may proceed. Again, we are very short on time, and to the extent that each of you can summarize your testimony it would be appreciated.

STATEMENTS OF JAMES T. B. TRIPP, COUNSEL, ENVIRONMENTAL DEFENSE FUND; AND JAQUELINE WARREN, NATURAL RESOURCES DEFENSE COUNCIL

Mr. TRIPP. Thank you. I do not intend to read my statement.

The Congress is now considering at least two bills—under its mandate to reauthorize the Safe Drinking Water Act. Rather than deal with specific provisions of those bills—and Jackie Warren will do that much better than I possibly could—I would prefer to step back and place the Safe Drinking Water Act in a conceptual framework so we can analyze some of the amendments being proposed and other ways in which the Safe Drinking Water Act should be amended.

In my view, there are some conceptual shortcomings to the Safe Drinking Water Act, in particular, part B, that deals with water supply contaminants. It contains, for all intents and purposes, no statement of potable water policy, no objective, no set of goals, and no comprehensive program for dealing with safe drinking water. Part B is basically a program, if it worked, set up to facilitate water utilities and communities in their efforts to clean up contaminated water supplies before water is distributed to the customers. Part B, therefore, does not focus on the sources of contamination at all.

What about part C? The principal part of part C is the underground injection well program. Again, in part C there is no statement or objective or purpose. What is the point of regulating underground injection wells if the resource objective is not stated? The articulation of an objective would be useful in regulating underground injection wells. It is not stated.

Furthermore, of course, as you well know, there are other statutes that deal with sources of ground water contamination, such as the Resource Conservation and Recovery Act. Again, none of them establish any kind of objective for maintenance of ground water quality.

Let me just make some general observations, because most of my experience in dealing with the Safe Drinking Water Act does not come from working with communities that have contaminated water supplies. Most of my work has been with communities that in fact have protected watersheds, and somebody wants to introduce some new major source of contamination into that watershed. We hear repeatedly from entities who want to introduce a major source of contamination into a watershed: "Oh, we can meet the EPA drinking water regulations even we if introduce that source of contamination." From these experiences I have concluded that the EPA drinking water regulations are being badly misconstrued and misused.

We have to face the fact that some communities have contaminated water supplies. A typical example would be New Orleans which takes its water from the Mississippi. On the other hand, you take communities in the Northeast and Northwest that have extensive protected watersheds, such as Seattle, and Tacoma, and New York City, and Boston. What we want is a program that addresses the problems of both kinds of communities.

The second issue we have to address is what determines the quality of potable water supply sources. That is basically a question of land uses in the watershed. By watershed I mean both a surface watershed or a ground water recharge area for a ground water source. In order to understand the dynamic of the quality of that water supply source one has to consider all sources of contamination in that ground water or surface water watershed, be it industrial, municipal, highway, nonpoint source, and acid rain which is—becoming recognized as an increasing source of contamination. It is particularly important to focus on what I call the critical portions of watersheds.

A third point I would like to make is that no Federal statute establishes any kind of objective for the maintenance of quality of surface or ground water used for potable water. The Clean Water Act does not clearly deal with the quality of water supply sources. Although one can read a national interest in drinking water quality into the general objective of the Clean Water Act. Furthermore, the Clean Water Act has largely been interpreted as a surface water act that deals relatively little with ground water. We can also look at the other Federal statutes that deal indirectly with ground water, such as the Safe Drinking Water Act, RCRA, the Surface Mining Act, and so on. None of them establishes any kind of a policy or objective for maintenance of water for potable water purposes. I consider that as a major failing of the Safe Drinking Water Act and the other statutes.

Well, what is needed? In my view, the Safe Drinking Water Act ought to be converted into a comprhensive Safe Drinking Water Act with a focus on, not only cleaning up contaminated sources through the kinds of processes described in part B, but strengthening processes that would be available to local communities to control the sources of contamination in their surface watershed or ground water recharge areas and to prevent the degradation of their watershed through introduction of new sources of contamination. The orientation of the act ought to be toward watersheds. What is now part B should be viewed as one of three components addressing safe drinking water needs. Part B now addresses the concern of what we should do for communities that have contaminated water supply sources which require treatment prior to distribution. The second concern has to do with those communities that could take some kind of action to control sources of contamination in their watersheds. The third concern relates to communities that in fact have protected watersheds and want to maintain those watersheds and prevent degradation of the quality of their high quality surface or ground water sources.

In this respect it would be helpful to provide administrative and judicial mechanisms so that communities that do have contaminated water supply sources, let's say contaminated with a specific organic chemical, could seek to abate that source of contamination. Why should the burden always fall on the community to pay for cleaning up its source when somebody, typically an industrial discharge or municipal discharge, is responsible for the contamination? Again, the existing statutes, not only the Safe Drinking Water Act but the Clean Water Act, do not provide that kind of mechanism efficiently and effectively.

Likewise, if we took this approach we could recognize that the siting of major sources of the contamination is very important. Underground injection wells, as well as surface impoundments and other major sources of toxic contamination should not be sited in a manner where their leachates or their wastes which will inevitably move through ground water will migrate to present or potential drinking water sources.

Finally, as you know, Mr. Chairman, coming from the State of Washington, there has been a historic interest in this country in the protection of surface water watersheds for municipal utilities. In some cases utilities have acquired land, as in New England, and in some cases municipalities have used public lands as protected watersheds. This interest stems back well into the last century, and we have to recognize increasingly today that the protected surface water watersheds that exist particularly in the Northeast and Northwest are important now not so much for preventing introduction of human pathogens but for keeping out all sources of toxics. We also should recognize that protecting the watershed and its natural vegetation is the most cost-effective approach to keeping toxic substances out of water supply sources.

I should point out that there has never been any comparable historic movement toward protecting ground water recharge watersheds. In that context, I strongly endorse S. 2131, which amends the sole source aquifer program, because I see that as a movement in the direction of lending Federal assistance to communities and to States that want to embark on the difficult program of delineating and protecting critical ground water recharge watersheds, particularly where those watersheds are still reasonably pristine and protected.

In closing, most of the amendments proposed in S. 1866, if viewed in this broader context, would be seen as a step in the wrong direction. This is so particularly with respect to the proposed change of language about the general standard which EPA is to use in preparing new drinking water regulations. This subtle change could facilitate introduction of new sources of contaminants into protected watersheds, both surface and ground water, which would be detrimental.

Thank you.

Senator GORTON. Thank you.

STATEMENT OF JACQUELINE WARREN

Ms. WARREN. Thank you, Mr. Chairman.

I have worked on safe drinking water since before the Drinking Water Act was passed. I was counsel for the environmental defense fund, working on that issue for many years, and have been involved in litigation over the act. I must say I share Mr. Tripp's views and Mr. Jorling's views.

The legislation was passed in the middle of a national controversy over the presence of organic chemicals in drinking water, many of which were known or suspected to be cancer causing. It is now 8 years later. EPA has established only one standard for substances which are known to be carcinogenic, and that was over the bitter opposition of the water supply community and was the subject of a lawsuit by the water suppliers. The standard was for trihalomethenes, which includes substances such as chloroform and other contaminants created in drinking water plants by the process of chlorination. But the synthetic organic chemicals which the Clean Water Act was designed to put an end to the discharge of in the Nation's waterways, and which the Resource Conservation and Recovery Act will hopefully prevent from causing future problems, cannot take care of contamination sources that are already there. The Safe Drinking Water Act addresses contamination coming out of the tap and asks: What is the drinking water supplier supplying to his customer?

The legislative history of the 1974 act is very clear that the law was intended to be a preventive one. Congress stated directly that they didn't want to wait for 20 years for absolutely conclusive proof we should have acted 20 years ago. What they said was, if the Administrator can make a reasoned and plausible judgment that a contaminant may have an adverse effect on health, then taking costs and economic feasibility into consideration, steps should be taken to reduce exposure to that contaminant. We haven't seen such action taken by EPA with respect to organic chemicals, and the proposals that are before you as amendments to the Safe Drinking Water Act would prevent the kind of steps that need to be taken from being taken.

I want to mention a couple of points about the Safe Drinking Water Act that should be kept in mind. First, establishment of standards is a prerequisite for monitoring of drinking water contaminants. The only time that a water supplier has to look and see what is in the water he is supplying is if there are standards already set. There are only about 16 or so drinking water standards presently in force. They do not include the major contaminants of ground water. Just as an example, wells all over the United States have been found to be contaminated with with trichloroethylene, tetrachloroethylene, vinyl chloride, carbon tetrachloride, dieldrin, and chloroform, all industrial chemicals. Those contaminants are not being monitored for under the Safe Drinking Water Act. Water suppliers are not looking for them, and in many cases have no idea whether those contaminants are present, although random surveys indicate they are widely present.

The second factor to keep in mind is that other regulatory programs are keyed to the substances on the safe drinking water list. For example, under the Resource Conservation and Recovery Act, the determination of whether leachate from landfills violate the endangerment standard depends upon whether the leachate contains anything that violates the Safe Drinking Water Act standards. That means that leachate could contain tetrachloroethylene and no one is going to know because tetrachloroethylene is not on the list of standards and it won't be looked for. The same test is applied to measure fluid migration out of underground injection wells, again looking for violation of the safe drinking water standards. It is the same thing Jim Tripp said about people making the argument their activity hazards to ground water is consistent with the requirements of the Safe Drinking Water Act. That is because there is an inadequate set of standards.

If you want to change the law and make it harder for EPA to set standards, then the law should also be changed to establish the Clean Water Act list of priority pollutants as the list by which leachate is evaluated, and the list that drinking water suppliers have to measure their drinking water against to see if contaminants are present, because the very same 129 pollutants being discharged in the Nation's waterways are showing up in the Nation's drinking water supplies. It has already been estimated that there are 700 contaminants in drinking water. The National Academy of Sciences said several years ago that many of them are known carcinogens. The vast majority of substances in drinking water haven't been tested.

On the question of making a reasoned and plausible judgment about whether something may have an adverse health effect, again, the legislative history was clear. It refers specifically to relying on animal studies indicating adverse health effects, such as cancer, as well as or the tangible presence of contaminants in drinking water. Animal data are generated by health researchers all over the country, and they are not studying the cancer rate in rats because they are worried about the health of rats. They are studying the cancer rate in animals because they are concerned about what that says for humans.

Many of the witnesses who came into the EPA proceeding in its 1976 attempt to deal with the Agency's problems, such as the former head of the National Cancer Institute and many other scientists, gave their judgment that the positive animal data on many of the contaminants found in drinking water coupled with the presence of those contaminants in the amount of water people consume regularly, in their opinion constituted a cancer risk. There are 20 epidemiologic studies that have been conducted, and they show a statistically significant association between chemical contaminants in drinking water and cancer. They certainly don't prove it; at best they are strongly suggestive. If they are right, if they are correct, the number of cancer deaths would be in the thousands, or even the tens of thousands a year. But EPA didn't accept those studies because they don't prove cause and effect. However, the animal data and suggestive epidemiology should be enough to require a prudent regulator to say that we should do something now to reduce the levels of organic chemicals in drinking water.

I don't think the difference in the standard setting basis is a matter of form over substance. If it is merely form, why make the change? In all the regulatory standards that affect health and safety, when this committee enacted the Clean Air Act with respect to toxic emissions, they said the standard should be "ample margin of safety." In 1972 with respect to toxic discharges into water, the committee said "ample margin of safety." The unreasonable risk standard has been applied under a number of statutes. Generally they are statutes that deal with products such as pesticides, when an unreasonable adverse effect standard applies. In such cases there are positive benefits from use of the product, and so there is a benefit to be evaluated against the risk. With respect to consumer products the unreasonable risk standard also applies. Under the Toxic Substances Control Act the same risk standard applies, again because there is a product with a positive benefit. If you want to change the standard in the Safe Drinking Water Act, I would urge you to adopt the ample margin of safety standared this committee has put into the other regulatory statutes addressing ambient contaminants. There is a body of law on what that means. Unacceptable risk, doesn't exist in any statute. It would just exist for lawyers, of which I am one. If you were to make that change, I think we would see much litigation as to what the term means. It is not a necessary change to be made. I would urge you to leave the language as it is or adopt the ample margin of safety standard that exists in other statutes.

I want to speak to another important change, which is the proposal to delete the technology requirement authority from the statute. EPA attempted to exercise that authority only once in the past, and that was to require the installation of a broad spectrum control technology for reduction of organic chemicals in drinking water. The statute presently in section 1415(a)(3) specifically states that if a supplier wants to use an alternative technology and can demonstrate that it is at least as efficacious as the one the Administrator is requiring, he may do so. In EPA's technology requirement proposal in 1978, the Agency specifically said that if someone has another technology that they think is better they can use it. I understand the argument was made to you that allowing the Administrator to specify technology hinders innovation. There hasn't been an innovation in drinking water treatment technology in this country in 50 years. If you leave it up to the water suppliers they are going to continue to worry about cholera and typhoid, and use treatment which is not appropriate for organic chemical contaminants. The only treatment technology innovation is being done under the auspices of EPA, and for organics removal is a combination of activated carbon and aeration, or resins, I don't believe that the inhibition of innovation is a valid argument, and I would urge you to probe witnesses who come forward and make that argument. As a matter of fact, compared with development of drinking water treatment technology in Europe, the Europeans are quite far ahead of us.

Senator GORTON. Excuse me, can you summarize? I am afraid we are running out of time.

Ms. WARREN. I think I really should speak also to the procedural changes. A lot has been written about the applicability of cost-benefit analysis to environmental causes of illness. It is very difficult to quantify the relationship between environmental contamination and disease, and for that reason very often the application of formal cost-benefit analysis operates to the disadvantage of the particular proposal to deal with the environmental contaminant. Under the Safe Drinking Water Act EPA presently considers cost and benefits, and clearly takes cost into account. But if the Agency is placed in a position where they must conduct a formal cost-benefit analysis, there will be problems. For example, on a chemical-by-chemical basis, evaluation of the cost of a treatment such as, activated carbon for a single chemical will make the carbon seem expensive for removal. In fact, carbon will also improve the taste and odor of the water, and will reduce the levels of many other contaminants. Those facts won't be taken into account, however, because only one contaminant would be considered in the evaluation. As a result, the equation tends to be skewed against a proposal to require the installation of a more expensive technology. For that reason, NRDC would urge the committee to leave the standard-setting basis as is, with cost to be considered, although not through formal cost-benefit analysis.

Thank you.

Senator GORTON. I would like each of you to answer the question as to whether or not you believe that drinking water is safer today than it was in 1974 when the act was first passed.

Mr. TRIPP. I would say that there are certainly major sources of the surface water supply and ground water supply which in 1974 were what I would call relatively pristine that are now more polluted than in 1974. Part of the reason for this degradation is a result of the way that part B has been interpreted. It has been interpreted by some to mean that, since EPA has promulgated no standards for specific organic chemicals it is perfectly all right for firms or persons to go into the watersheds and introduce organic chemicals. I see that as being a reason.

Ms. WARREN. I would say that we know a lot more now about the quality of drinking water than we did in 1974, especially that our ground water may be in some areas at least as contaminated as surface water. In fact, where the same chemicals are measured in surface and ground water, the ground water concentrations are orders of magnitude higher. For trichloroethylene the highest level ever measured in surface water was 160 parts per billion. It has now been measured at 35,000 parts per billion in ground water. In 1962, the Public Health enacted drinking water standards for common carriers. EPA codified them in 1975 as the interim primary drinking water regulations. In 1979 EPA added one additional standard to the list, for trihalomethanes. To the extent that there are now communities complying with the trihalomethane standard, their water is much safer than in 1974. But, in general, I can't say that the water is safer with regard to organic chemical contamination. We know more about it and I think it is probably worse.

Senator GORTON. Mr. Tripp, in connection with your, I must say, challenging proposal of going to the source rather than the end product, what do you feel the proper role of the Federal Government to be in relation to the siting of potential installations which could have an adverse effect on water, land-use controls, and the like?

Mr. TRIPP. The role of the Federal Government that I would endorse is the role that is set out with respect to ground water recharge areas in S. 2131, where the Federal Government, through funding and technical assistance and so on, provides the opportunity and the legal framework for the communities and States to engage in watershed protection programs.

Senator GORTON. So you would follow that method of encouraging State and local communities to do it rather than to impose controls in that regard directly from the Federal Government?

Mr. TRIPP. Well, as I indicated in my testimony, I would do the same for surface water watersheds as S. 2131 does for some ground water recharge areas. But what the Federal Government does with the rest of the act, particularly part B, has an effect on what local communities and States can probably legally do in terms of imposing constraints on siting of hazardous waste facilities and land use controls and what constitutes a scientific basis for its actions. How can a local community say that it will prevent siting of any hazardous waste facility in a particular watershed which might discharge trichloroethylene, for example, into the ground water when the drinking water regulations do not address that contaminant?

Senator GORTON. Senator Moynihan.

Senator MOYNIHAN. I think I agree with the chairman. I appreciate, Mr. Tripp, your remarks about S. 2131. The particular and compelling quality of the sole source aquifer situation is that you deal with what really are irreversible problems. You can create an irreversible condition, and I don't think you could find, in the whole range of environmental questions, a specific in which the ratio of prevention to cure, is so enormous. Very little prevention effort can maintain the present situation, continuously high levels of contaminants, and very little avoidance of the problem can spoil them forever. They are sole source aquifers. Once they are poisoned, they stay that way. And I think that I simply agree with what Mr. Tripp says. Thank you.

Senator GORTON. I should like to thank you both very much today for your help.

Our next witnesses will be Mr. Harpster, Ms. Hayes, and Mr. Shafroth.

Mr. Harpster, you may proceed.

STATEMENTS OF ROBERT HARPSTER, EXECUTIVE DIRECTOR, LEAGUE OF IOWA MUNICIPALITIES, AND HON. JANET GRAY HAYES, MAYOR, SAN JOSE, CALIF., ACCOMPANIED BY FRANK SHAFROTH, LEGISLATIVE COUNSEL, NATIONAL LEAGUE OF CITIES

Mr. **Harpster**. Senator, in deference to your busy schedule, I will briefly go through some of the highlights of my testimony. I am Robert Harpster, executive director of the League of Iowa Municipalities, an organization representing some 900 of the 15,000 cities that are represented either directly or indirectly by the National League of Cities. I am appearing today on behalf of the National League of Cities with Mayor Janet Hayes from San Jose to address some of the issues relating to proposed amendments and changes to the Safe Drinking Water Act.

With the time that we have available, I think that the most practical way to proceed is to identify some of those issues that I believe will not make your job as chairman of this subcommittee, or the committee as a whole, any more enviable, and that is trying to decide which direction to go. As a matter of fact, the information I provide today is going to further complicate your task.

Specifically, I would like to address one element of the Safe Drinking Water Act that has not been addressed in the testimony delivered to date, and that deals specifically with naturally occurring chemical contaminants in some of the water. Iowa is a State that sits on two larger aquifers. It is a State that contains a number of limestone formations and karst formations, and because of those formations we have a direct conduit to some of the ground water aquifers on which 1,400 public water supplies depend for most of their drinking water. It is within those aquifers that we have found naturally occurring radium 226 and 228. Some are far in excess of the levels that have been set by the Environmental Protection Agency, which is 5 picocuries per liter. Some of them range as high as 20 picocuries per liter in a community of 1,255 in northern Iowa.

The problem is that it is naturally occurring. Because it is naturally occurring the cities in the State of Iowa have very few recourses as far as trying to correct and bring their water situation into compliance with EPA standards. The use of alluvial wells requires them to be close to rivers, which they all are not. The ion exchange process, which is a recourse available to them, is very cost prohibitive. Third, most of the attempts to bring some of the well systems into compliance is just impractical from a cost-effective standpoint.

What I would like to do for the remainder of my time available to me is briefly highlight to you the experiences that we have had in dealing with some of these issues in the State of Iowa.

As I have indicated, the radium in the water in the State of Iowa occurs as a natural element. It occurs through limestone formations, and the chances of trying to eliminate some of these problems raises the specter of adding additional health problems because through an ion exchange process, which is one of the alternatives available to cities, you have to introduce a large amount of sodium into the water which creates the added health threat of cardiovascular problems because of the additional salt content. In theory, according to Federal statistics right now, if 1 million people drank the half gallon of ground water in the State of Iowa for 70 years, the Federal estimate is there would be two more cases of bone cancer than would occur if no radium occurred naturally in the water. It now appears the costs of complying with some of the standards set by the Environmental Protection Agency are not as marginal as we had been led to believe originally. These costs occur not only in the notification process once the radium is discovered, but also in trying to go to the ion exchange process, which several cities have tried to do, and the cost elements are now approaching $4 million in one community alone. I have over 130 communities now experiencing some level of contamination in their ground water supplies.

I would like to digress for a minute to bring to the committee's attention what has just been revealed in the State of Iowa. Dr. George Hallberg, chief of geological studies division for Iowa Geological Survey has just completed a survey that indicates 25 percent of the entire State of Iowa, or 6,800 square miles or 22 counties, have significantly high levels of nitrates, an agricultural pollutant that can be dangerous to infants. A fourth of the water samples taken do exceed the Government standard for nitrates. Most of these problems are directly related to the fact that the farmers in the karst areas have to tile their field in order to get the runoff. But the tiles also serve as direct conduits to water supplies in aquifers, and the nitrates go directly to the aquifers and underground water supplies.

Because Iowa's communities encompass so many that are small and rural in character, I wanted to give you the thinking on this, and I will now defer to Mayor Hayes.

Senator GORTON. Mayor Hayes, we are delighted to have you here. You may proceed. You should know that under our rules your entire statement will be included in the record in full, so that if you wish to make points to us as the preceding witnesses have it will be appreciated.

STATEMENT OF HON. JANET GRAY HAYES

Mayor HAYES. Thank you very much, Senator Gorton and Senator Moynihan. I would like Mr. Shafroth to distribute to you the editorial cartoon that I brought from the San Jose Mercury. We are in the wine country, and I think you can appreciate that.

Senator Gorton, Senator Moynihan, and all of those in this room and country that are concerned about the Safe Drinking Water Act, I came all the way from California last night to testify before you today on this very important subject, and I leave tonight for Long Island, where I understand they also have some great concerns about sole source aquifers. I want especially to thank you, Senator Gorton, for your help in addressing the transportation problems of hazardous waste before Secretary Lewis yesterday. For NLC, this was enormously helpful to us.

I might just begin by saying these glasses of water might be looked upon with some suspicion in certain parts of San Jose and in other parts of the country. San Jose, as you may know, is the county seat of Santa Clara County and the center of the Silicon Valley. Over 25 percent of the country's semiconductor manufacturing in this Nation is made in our county. We are very proud of the significant contribution that our county has made to the advancement of technology and also to the improvement of our U.S. balance of trade.

You have, as noted, received my written statement in greater detail documenting NLC's position on this issue of ground water contamination, and as a mayor of a city that has recently experienced this problem firsthand I would like to underscore some of our experiences. I am putting forth some of my examples with the NLC recommendations so you will understand clearly the kind of Federal action that we need to assure safe drinking water to ourselves and our people.

Last December, the absence of Federal standards for monitoring industrial chemicals together with the lack of common standards for contamination of drinking water put our public agencies, water purveyors, both public and private, private industry and everyone who drinks water in what we called a toxic quagmire with no one in charge.

An online 5,000 gallon underground waste solvent tank failed at a major local industry, an electronics company; exactly when, and for how long, no one knew. But we approximated 20,000 gallons leaked out of that underground tank. The testing of a nearby public well belonged to a small and private water company revealed there was a very high-level contamination of trichloroethane, also known as TCA, which is a solvent used widely by the semiconductor industries.

After reading about the leakage in the newspaper, which incidentally was reported anonymously to the newspaper, the residents of the neighborhood near the well began documenting what they believed was an abnormally high number of birth defects, miscarriages, stillborns, and heart valve defects in their infants. You can understand the fear and anguish such charges can cause a community, as well as the extensive media coverage that that situation generated. And also I might say all the unemployed and underemployed attorneys in the area I think flocked to the area immediately. This is what happened in San Jose, and I would like you to walk in my shoes and place the last 6 months:

First, the City of San Jose had no jurisdiction over the water company. It was a private company.

The only study anyone could track down on possible health effects of TCA was done in 1975 by Dow Chemical on mice.

Large discrepancies exist over the exact level of contamination in the wells, ranging from 1,700 parts per billion to 5,700 parts per billion.

We found there was no routine test of drinking water for industrial chemicals required by anyone.

We found there was no birth registry or records existing to determine if there is an abnormally high number of birth defects. We just did not know.

We are now facing a $10 million lawsuit by one of northern California's leading attorneys. It has been filed by the individuals in that neighborhood, naming our city, the State of California, regional agencies, the county, the electronics company, and the private water company as defendants.

We found there were few performance standards that were in existence for tanks storing hazardous materials.

After that was reported, similar leaks turned up in other parts of the county and actually throughout the bay, though to date none have contaminated public drinking water.

Add to this the confusion of which Federal, State, or regional agency was in charge of what and you have a pretty good picture of what things have been like in San Jose recently.

Despite these problems, local government and private industry are moving at an astonishing rate to address the hazardous material issue on a variety of fronts.

The semiconductor industries and the electronics industries came forth in a meeting with me and developed a list of nine chemicals that were widely used that they considered hazardous and that they knew were not being tested and could conceivably leak into the water wells. They felt testing of these chemicals would be important, and we got the State to do this. So the testing for these chemicals now is a part of a major water testing program that is half completed. So far the results look very good.

A regional agency is gearing up now for a major monitoring effort to determine whether other storage tanks are leaking.

Local government and private industry are now developing a comprehensive hazardous materials model ordinance. And I have passed out material which details the efforts.

So we are very pround in our area of the public-private cooperation in responding to our immediate problem. But it hasn't been any picnic.

We definitely believe the Federal Government must play a role with us in local government and industry if we are going to effectively address this issue of ground water contamination.

The National League of Cities is recommending that Congress move forward in three particular areas in our local regions so as to maintain safe drinking water:

One, we need to establish what level of water contamination by any given chemical constitutes a threat to public health.

Two, we need to develop a standardized system of monitoring and testing public drinking water for industrial chemicals.

Three, we need to establish uniform testing procedures for checking public drinking water for hazardous chemicals.

The first goal must be to achieve nationwide agreement regarding what is safe and not safe. We don't want our fine semiconductor industries to go to Arkansas or someplace else. We want them to stay here. We do not want to be at a competitive disadvantage. We are now in the midst of a chemical revolution. Research into the health implications of industrial chemicals as drinking water contaminants must be conducted at the national level utilizing our national resources—public and private and academic.

I read somewhere that an attorney trying to wade through the confusion of the national hazardous chemical policies concluded in dismay that in the United States chemicals have civil rights: they are innocent until they are proven guilty. Somehow we have got to find a way to establish just how innocent they are before they find their way into our drinking water.

Once the hazardous levels and standards are determined, we need a system of routinely monitoring and testing the drinking water for industrial chemicals. As I have said, no one requires any testing of water for industrial chemicals in our area. Testing is done for virus, bacteria, herbicides, and pesticides, leaving industrial chemicals unchecked on a routine basis.

Finally, in order to have meaningful monitoring and testing program, uniform testing procedures must be developed and utilized. When agencies in our area have tested for parts per billion, we have learned that the most minor variations in testing procedures can destroy the validity of some tests. When we immediately checked the public wells and the first tests came back that were collected in plastic containers the count was very high, and we went back and collected in glass containers and it was all right. It is a sensitive testing procedure. We need the help of the Federal Government in acquiring precise equipment and in developing the exact procedures.

Our constituents, the people of our cities, need you to assure that the water they drink is safe. We want a Safe Drinking Water Act, not a "Maybe Safe Drinking Water Act."

We appreciate the opportunity to come here and discuss with you this extremely important problem, and I welcome your questions.

Senator GORTON. The testimony of the two of you is very interesting, and it seems to me somewhat at variance from one another. I will ask the mayor, how safe a drinking water act do we have? Do you wish to have full Federal controls over the methodology and the controls which you must establish in San Jose no matter what those costs will impose upon the city?

Mayor HAYES. No; I am here to first of all speak against any weakening of what we have now. As I said, there is definitely a working partnership that is necessary in addressing this problem and, as I have said, the research efforts in the levels of what is safe and isn't I think has to be done at the Federal level.

Senator GORTON. If the Federal Government provides an adequate system of telling you what is safe and what is not safe, do you wish the Federal Government to be able directly to enforce that on municipalities and local governments, or is information enough and should it then be up to municipalities to determine whether they are going to accept or ignore that advice?

Mayor HAYES. If you put out standard monitoring procedures and testing procedures that we all live by, then it is up to us to live up to those, otherwise the industries and the communities are in jeopardy not only from a liability point of view but a public health point of view.

Senator GORTON. Mr. Harpster?

Mr. HARPSTER. I think, Senator, a distinction also has to be between the point in my testimony, which is a naturally occurring contaminant and those such as barium, arsenic, nitrates, et cetera. For those that are introduced into the system, I think the Safe Drinking Water Act as we see it today is acceptable. For those that are naturally occurring, as indicated in the State of Iowa, I think we may want to look at some other way of addressing the problem. As far as the Federal Government's assisting local government or setting guidelines or rules, I think along with that we have to have some direction as far as technical assistance.

Let me digress for a second by saying of the 900 communities in the State of Iowa that my organization represents, they range in size from the population of 10 to the city of Des Moines of 191,000.

Senator GORTON. Let me interrupt there and say does this lead to the statement there has to be a separate set of controls for large systems and small systems?

Mr. HARPSTER. I think there has to be a distinction made between the technical assistance that is to be provided to the smaller rural systems and some of the standards that are set for the larger systems, yes, Senator.

Senator GORTON. You stated in your testimony, I believe, that people are willing to pay increased amounts for the assurance of clean drinking water.

Mr. HARPSTER. Yes, sir.

Senator GORTON. If that is the case, why should the Federal Government's role in this be anything more than providing national standards as to what constitutes safe drinking water and to leave the decision as to how much to spend and what to do about it to each community?

Mr. HARPSTER. Senator, I believe the people are willing to pay the cost for it. However, it should be pointed out that I believe that water is the lifeblood of this planet, and whether it is in the pores of the rocks underneath our feet or whether it is in the ground water aquifer we have a responsibility and duty nationally to protect it. And the taxes that go into Washington from all the States that have been used by Washington for other purposes than providing technical assistance to communities in the State of Iowa could indeed be returned to them in this particular case.

Senator GORTON. Madam Mayor, do you wish to comment on that?

Mayor HAYES. I would like to say, as you know, half of the drinking water in the United States comes from ground water, and we are in the midst of an age where there are 100 million new chemical compounds and there is no testing procedure. We don't know what is safe. What struck me as the mayor is how much we don't know about this problem. I feel that a person in a town of 10 is just as entitled to safe drinking water as a constituent of mine in San Jose where we have 660,000. That is a basic human right. And I think the Federal Government just has to help us in the expensive research and testing and standards and monitoring procedures to tell us how to do this.

Senator GORTON. I do want to get your precise statement, however, on the distinction between those two. I think there is very little controversy over the appropriate role of the Federal Government in doing what you have said in the monitoring and the testing and the determination of what unsafe chemicals there are, and the like. Do you believe beyond that, however, that the Federal Government has a responsibility first to order you as well as the smaller communities to utilize certain techniques to control these health risks, and beyond that, does the Federal Government have a responsibility to subsidize your meeting those standards?

Mayor **Hayes**. Yes, I believe so in some ways. Let me say first of all there is controversy over the Safe Drinking Water Act and there is a 25-percent cutback being proposed at the very time when we are facing this enormous problem that is in our communities right now. And I believe it is like clean air. I think there have to be certain standards, certain minimum standards, that communities are obligated to assure their citizens.

Senator **Gorton**. Yes, but in the Clean Air Act, when the Federal Government sets those standards the communities are obligated to meet them, but the communities and the industries pay for them.

Mayor **Hayes**. That is right. And in some communities they have higher standards than the minimal standards if they so choose because of the particular problem.

Senator **Gorton**. But you are telling me in this case the Federal Government has some kind of obligation to pay for meeting this standard. At least that is the way I understood.

Mayor **Hayes**. To me it is all the same pocketbook, the tax money, whether it is the local, State, or Federal level. It is all the same pocketbook, and it is just the most effective use of those tax dollars. I think we in government have an obligation to assure our citizens safe drinking water. They expect it. And if they don't get it, we are just going to get more lawsuits and adverse publicity. The citizens expect it from us because they don't trust the industry to self-monitor. This one case I am proud of the fact in San Jose we have worked cooperatively with the private sector on this. They want it. They realize the problems they are going to have with liability and adverse publicity. They have come to us and said they want to work with us.

Senator **Gorton**. Thank you for your testimony.

Senator Moynihan was called away and wishes very much to listen to the testimony of the next three witnesses, Mr. Lang, Mr. Cohalan, and Mr. Blass, from New York. He will return at approximately 12:25. So we will have a recess until that hour.

[Brief recess.]

Senator **Moynihan** [presiding]. A very good afternoon to our guests. Mr. Cohalan, why don't you lead off. It is a pleasure to have you and Mr. Lang and Mr. Blass and Ms. Fallon here to testify on a subject I know engages your interest.

STATEMENTS OF PETER F. COHALAN, COUNTY EXECUTIVE, SUFFOLK COUNTY, N.Y.; MARTIN LANG, SUPERVISOR, TOWN OF SOUTHAMPTON, N.Y; GREGORY BLASS, LEGISLATOR, COUNTY OF SUFFOLK, N.Y.; AND MARY A. FALLON, SUPERVISOR, TOWN OF EAST HAMPTON, N.Y.

Mr. **Cohalan**. Senator, thank you very much for giving us the opportunity to testify here today. The four of us are legislators, Gregory Blass from the county of Suffolk, Supervisor Martin Lang from the town of Southampton, and Supervisor Mary Fallon from the town of East Hampton, on Long Island.

Before I open my comments, I beg your leave to leave as soon as I finish my remarks as I am late for a meeting with Senator Baker.

Senator MOYNIHAN. What is this meeting with Howard Baker about?

Mr. COHALAN. We are trying to find an opponent for you and we can't.

Senator MOYNIHAN. Go right ahead.

Mr. COHALAN. The county of Suffolk has 1,300,000 people. We comprise the east end of Long Island. Along with the counties of Nassau, Kings, and Queens, Long Island in the aggregate has about 8 million people.

The future drinking water situation on Long Island may well be summed up by Samuel Taylor Coleridge's famous words: "Water, water, everywhere; nor any drop to drink."

We are surrounded by the Atlantic Ocean and Long Island Sound. Unfortunately, desalinization of saltwater is not a viable method of obtaining drinking water for us at this time.

There are no great mountain ranges where snow melts in the spring to provide great surging rivers of crystal clear water on Long Island. In fact, there are only four bodies of water on Long Island that can even be referred to as rivers, and they all happen to be located in Suffolk County. I use the term "river" loosely because these bodies of water, as well as the numerous streams, ponds, and lakes on Long Island are nothing more than surface ground water. The only current source of water for the 3 million residents of Nassau and Suffolk Counties is ground water. And we don't want to have the problem of Brooklyn and Queens. They have lost the aquifer due to development of that area.

It is estimated that there are over 60 trillion gallons of water in storage beneath Long Island. This water is contained in the upper glacial Magothy and the relatively unexploited Lloyd aquifer. It would seem, therefore, that Nassau and Suffolk Counties should have a wealth of water. Unfortunately, our precious ground water is extremely fragile and all to easily destroyed by its greatest enemy—all of us, mankind. Life's ultimate indispensible mineral—water—is severely threatened on Long Island.

I do not wish to go into a lengthy scientific dissertation on ground water since I am not a scientist, but a few brief facts may help to illustrate Long Island's ground water plight.

There are two major factors that alter the quantity and quality of ground water. One is the rate of withdrawal and the other is pollution.

In 1978, it was estimated that withdrawals of ground water from the geologic formations beneath Long Island approached 400 million gallons per day. Based upon the relatively small population increase over the last 4 years, the withdrawal rate has basically remained the same. Pumpage and use characteristics on Long Island vary greatly from place to place. Ground water removal may be done by a single family with its own domestic well on a small parcel of land, or by a large water district with dozens of high capacity wells located miles apart. For example, the Suffolk County Water Authority has 12 supply plants withdrawing water from some 400 wells throughout the county.

The effect of this constant withdrawal of ground water, along with the impact of recent periods of drought, has caused a general and continuing decline in water levels. However, we believe with proper regional water management there will be sufficient available ground water to supply Long Island for many years.

Senator MOYNIHAN. May I interrupt to say that is news to me, that the ground levels are declining in any significant level. Maybe we could get the numbers sent in.

Mr. COHALAN. We will get the numbers from the Long Island Regional Planning Board.

Senator MOYNIHAN. As you know, in many aquifers around the country this is happening at a desperate rate. I think you are still feeling comfortable.

Mr. COHALAN. Very much so. It is happening, but the quantity of ground water is not the most critical issue confronting us. The critical issue is the quality of ground water on which we depend.

Precipitation is the sole source of freshwater on Long Island. This rainfall recharges the ground water by percolating through the soil. Once the recharged water enters the saturated zone it moves very slowly, but eventually travels long distances. As a result, human or natural contamination of the land surface or the air may have a prolonged and far-reaching impact upon the ground water. I am advised that it takes about 100 years for water from the surface to reach the lower portion of the Magothy in the center of the island. Travel time for the water from the center of Long Island to the barrier beaches off the south shore takes about 800 years, and travel time to the north shore of Long Island is about 400 years. Therefore, most Suffolk County residents with deep wells or public water are presently drinking pure, uncontaminated water that fell as rain over half a century ago.

On the other hand, we also have residents who have contaminated wells as a result of fairly recent pollution. In Westhampton, three residents found their three wells to be contaminated. The suspected cause of this contamination was two jet fuel spills that took place in 1966 and 1974 about 1 mile from the affected homes. These three families are apparently now suffering the consequences of accidents that occurred 8 to 16 years ago. It has taken that long for the contamination to travel 1 mile.

The fact that anything we put on the ground may eventually find its way into our water supply is not only difficult to grasp but also potentially frightening. Pesticides that our farmers once used to spray their potatoes are now contaminating our drinking water; as storm water runnoff from our roads and highways.

Senator MOYNIHAN. Could I just note you heard the testimony this morning about Iowa, and about a third of the water in Iowa now has nitrate levels that are worrisome, and it is ground water, too.

Mr. COHALAN. It is a concern of ours. As a matter of fact, in high-density neighborhoods we have found one family's cesspool can pollute, and is polluting, another family's well.

In addition, airborne pollutants from industries and factories many miles from Long Island return to Earth in rain and contaminate our ground water. Even our garbage is conspiring against us.

Local landfills are now considered a major source of ground water contamination.

The Sole Source Aquifer Protection Act will not solve all our drinking water problems, but it is certainly a major step in the right direction. By some strange twist of fate the central Suffolk pine barrens, the prime water recharge zone for Long Island, have managed to remain relatively undeveloped. This area of approximately 110,000 acres has just the right mixture of sand, gravel, and clay to absorb and cleanse enormous amounts of rainwater. Its location, in central Suffolk, insures that ground water recharged through the pine barrens will not be contaminated by polluted waters to the east or west; because the pine barrens stretch along a high ridge, rainwater will therefore penetrate more deeply into the aquifer. By protecting the pine barrens, the deepest and purest ground water will be kept clean and uncontaminated. For the sake of all current and future residents of Long Island, we urge the designation of the central Suffolk pine barrens as a special protection area.

I have reviewed the Sole Source Aquifer Protection Act and I would like to comment upon two segments of the bill that I feel deserve special attention.

One section deals with the time periods allocated for the Governor and the Environmental Protection Agency to approve actions under this legislation. If all the various officials took the full amount of time allotted for approval, it would be a very involved process. I am not a proponent of hasty action, but I feel in this case expediency should be stressed. Therefore, I would hope that when this bill is enacted provision will be made to insure that EPA and the Governor review the material presented in a timely fashion.

Senator MOYNIHAN. Is that the kind of legislative language that would be acceptable to you, "timely fashion"? That is statutory language, I believe, isn't it?

Mr. COHALAN. We can't afford delays.

Senator MOYNIHAN. Let's talk about that when we get into markup. But "timely fashion," I think, is the point we want to make. You can't say 90 days because there is no common set of circumstances.

Mr. COHALAN. That is right.

The other section I wish to comment upon is the section concerned with the establishment or designation of a planning entity to develop a comprehensive management plan. The language in the bill indicates that the planning entity should have adequate representation from local municipalities to assure their participation throughout the planning process. This is extremely important to us. We must remember that ground water contamination does not respect manmade boundaries. Water protection is a regional concern. Therefore, adequate representation from all concerned jurisdictions is highly desirable. On Long Island we already have a regional planning entity with a wealth of expertise in regard to ground water—the Long Island Regional Planning Board, which is a Nassau-Suffolk County entity. Perhaps language can be added to this bill stipulating that where a knowledgeable regional planning body already exists, it shall be considered for designation as the agency responsible for the development of a comprehensive management plan.

Finally, in closing, I would like to thank you, Senator, and also Congressman Carney for drafting this vitally important piece of legislation, and also this subcommittee for holding these hearings. What you have done is very farsighted and, if adopted, will have a measurable impact on Long Island, and we are very happy that you have done so. Pure, and clean, and uncontaminated drinking water is crucial for survival. We must all work together to insure safe drinking water for the many generations to come after us.

Once again I thank you.

Senator MOYNIHAN. Thank you, Mr. Cohalan.

Can I say we are also very much interested that industries that are affected and other land users get represented here. Our section 2 says the Governor designates the planning entity. I think if you would find we are in a situation where one exists, he doesn't have to establish one.

You have to run. I thank you very much.

Mr. COHALAN. Thank you.

Senator MOYNIHAN. But don't leave before I ask you one thing. Go back to the Island, will you, and tell as many people as you can—get it in News Day—that the water they are drinking fell as rainwater 50 years ago. That is a new idea. And 50 years ago they were all potato fields, and they used to get the potato bugs by dropping the beetle into a can of kerosene.

Mr. COHALAN. As a matter of fact, Senator, 50 years ago Suffolk County was the leading potato-producing county in the United States. Now we are third because of the development.

Senator MOYNIHAN. Yes; I mean they are drinking water that fell on beautiful farmland before half the chemicals in the world today existed. That water fell in 1932, and it has worked out fine. But we can lose that, and the ratio between loss and recovery is disaster.

Will you tell them another thing. If we poison our one well, there will be water. We will bring it in from the Adirondacks. It will almost certainly not be Catskills water, it will be treated Hudson River water, which doesn't smell good but will be certified safe. How would you like to have that in East Hampton when you are sitting on top of one of the finest aquifers in the world? We just have to keep it clean.

Mr. COHALAN. I agree with your comments. Thank you.

Senator MOYNIHAN. Thank you very much. It is very kind of you to come.

Now, how do you feel about it, Mr. Lang? Would you be the next to testify?

STATEMENT OF MARTIN LANG

Mr. LANG. Sure will, Senator. It is a real pleasure.

Enclosed with the 40 copies of my message today is also a town board resolution supporting my being here today.

Our ability to survive on Long Island depends upon our ground water reservoir. The conservation of our ground water reservoir by means of watershed management and planning for growth within the limits of available water supply is absolutely necessary for our survival.

The town of Southampton is now in the process of updating its master plan, with ground water quantity and quality of prime concern. The efforts that both the State of New York and the Long Island regional planning board are making to establish management guidelines for land use in the aquifer recharge area known as the pine barrens deserve applause.

Ground water management efforts, however, are time consuming, underfunded and, until of late, uncoordinated. The dynamics of our underground water supply are just beginning to be understood. The interrelationship between man's activity on the surface and the quality of the water beneath are becoming painfully clear as we learn of the penalties of improperly using pesticides, cesspool cleaners, and fertilizers, of fuel spills, and illegal toxic chemical dumps, and even such activities formerly thought harmless as road salting.

Senator MOYNIHAN. As road salting. Exactly so.

Mr. LANG. Yes.

The Federal Government to date has not taken a direct role in conserving the Nation's underground water supply. Efforts to date have been directed at surface supplies. Ground water is largely an unnoticed and neglected commodity at the Federal level and, consequently, Federal decisionmakers have not given much attention to preserving this particularly irreplaceable resources. But, thanks to Senator Moynihan and his colleague in the House, Congressman Carney, the situation is improving.

We are here today to urge the adoption of the proposed Sole Source Aquifer Protection Act of 1982 not only for Long Island's 3 million residents, but for the millions of other people across the country depending on ground water as their only water source.

And it is for our constitutents and for the constituents of these other municipalities under the proposed act that we request amending certain provisions to safeguard the integrity of the local community under the act. As the Senators are well aware, our method of government depends upon a system of checks and balances. But, as written, the act provides no checkoff or safety valve for the municipality once it petitions for special protection. The town of Southampton feels that certain procedural improvements as outlined in attachment A hereof will permit the petitioning municipalities to have adequate representation and opportunity for participation and concurrence in the planning and management process.

The act as proposed leaves the municipality at the mercy of the Governor and EPA Administrator to interpret the management as beneficial, or at least not adverse, to the municipality's planning efforts. The municipality is given no formal approval procedure. We find this part of the act unsatisfactory. The procedural improvement we propose would remedy this.

Again, the town of Southampton supports the need for and intended result of the proposed act and urges adoption of the act with the procedural amendments I will mention right now:

Proposed amendment. On page 4, under (e):

> If the Governor approves such a petition, he shall with the concurrence of the petitioning municipalities.

On page 5, (e)(2):

> . . . with adequate representation of municipalities to assure their participation throughout the planning process.

We would like to add:

> Each petitioning municipality shall at the outset of the planning process approve its representation on the planning entity.

On page 9, (g)(2)(B):

> Transmit any draft and final plan to all appropriate municipalities for review, comment and approval.

Page 11, (h)(6):

> A separate management entity with approval by each municipality should be so designated or established, pursuant to State law, to implement the plan. Without such approval, elements of the plan pertinent to the disapproving municipality shall not be binding upon that municipality.

That would be our recommendations under the comments.

Senator **MOYNIHAN**. Very clear, very forthright. The committee will take those up directly when we get to a markup of the bill.

Let's hear from Mr. Blass next, and then we can talk a bit.

You brought some resolutions and statements with you, a statement from May Newburger and Edward Cantor, a letter from the town of Huntington, and a statement from Nancy Nagle Kelley. I would like to have them placea in the record. (See pp. 402, 410, 418, 419.)

And Ms. Fallon, since you have been so courteous, this really is a resolution, seal and all, perhaps we will hear from Mr. Blass and then you. Speak as you wish.

Mr. **LANG**. Senator, the town of Southampton and myself want to thank you for hearing us today, and it is a pleasure being here.

Senator **MOYNIHAN**. Thank you.

We will hear from Mr. Blass.

Mr. **BLASS**. Senator, I would be glad to yield to Ms. Fallon since you are hearing from town supervisors now.

Senator **MOYNIHAN**. That is very thoughtful. Ms. Fallon, why don't you proceed.

STATEMENT OF MARY A. FALLON

Ms. **FALLON**. It is a pleasure to be with you, and we thank you, Senator Moynihan, for the opportunity to address the committee this afternoon.

The sole source of potable water for drinking in eastern Suffolk is located in underground aquifers which must be protected from contamination if there is to be a continued support of potable fresh water for the residents. From the experience of western Long Island, it is clear that development and dense concentrations of population have adversely affected ground water, and the towns must properly plan for the future of its water sources to avoid the same fate for eastern Suffolk's ground water.

We also recognize the increased incidence of ground water contamination on eastern Long Island, and we have become aware of this concern with chemicals in the water. However, concrete action is necessary to reverse this trend of contamination and to assure the preservation of this precious resource.

Both the State and Federal Government have recognized the importance of this resource and are considering actions to insure its preservation. The State legislature has created a legislative commission on Long Island water resources and has already introduced legislation to assist the water management plans for the sole source aquifers.

In our Congress, thanks to you, Senator Moynihan, and Congressman Carney, there has been needed legislation introduced. This legislation would create a sole source aquifer protection program to provide funds for watershed acquisition and for the establishment of watershed management plans by local government. The proposed amendment to the Safe Drinking Water Act would provide funding for watershed acquisition. In addition, funds would be made available for local governments to establish plans for watershed protection.

Clearly, public acquisition of these watershed lands would provide the greatest assurance that pure recharge would continue to take place. The town board of East Hampton wholeheartedly endorses the sole source aquifer protection bill, and I have previously submitted a certified copy of our town board resolution.

However, we know we cannot solely rely on the public acquisition funding to preserve watershed areas. The East Hampton Town Board at tomorrow's meeting will propose a 90-day subdivision moratorium in all watershed areas in the town of East Hampton. During this moratorium the areas will be evaluated by a planning consultant and hydrologist to insure our lands are properly zoned to further protect our watershed areas.

Working with you and the State, I am certain that future generations will have clean, pure water. Let us not wait, and I do hope we will be successful in working with you to pass the sole source aquifer bill.

I thank you.

Senator MOYNIHAN. Thank you. It is nice to see the two towns in such agreement. That isn't necessarily always the case.

Remember that Senator Gorton is going to be our tug that hauls this barge through the legislative process, but I appreciate your kind remarks and also about Representative Carney, who is our colleague on the other side, and I think the whole delegation on the island is on this. What we have to do is find enough parts of the country. It is a terrible situation. If ever there was a benefit-cost ratio we could define how little is going to be required and how much would be lost.

Ms. FALLON. It is very true.

Senator MOYNIHAN. Welcome, Mr. Blass.

STATEMENT OF GREGORY BLASS, REPRESENTATIVE, SUFFOLK COUNTY LEGISLATURE

Mr. BLASS. Thank you, Senator. My name is Gregory Blass. I am the first district representative in the Suffolk County Legislature. My district includes Supervisor Fallon's town of East Hampton, a good portion of Supervisor Lang's town of Southampton, as well as the towns of Riverhead, Southold, and Shelter Island, and a good portion of northeast Brookhaven. All areas have a sole source aquifer dependence.

I am not going to reiterate the recommendations by Supervisors Lang and Cohalan about the improvements we think could be made with the process of S. 2131. I will say I join with them in those recommendations. And I would also express the wholehearted support of not only myself but a substantial majority of the Suffolk County Legislature. I will have a sense of resolution for the subcommittee as of next Tuesday.

I would like to point out in addition to contamination problems we have talked about, which is a quality problem with the drinking water of Long Island, we also have a quantity problem. We have, for example, a situation involving saltwater intrusion in the east end water wells, and that accentuates the need for an alternate supply of drinking water. The sole source aquifer we have is on an island. Following the policies of Long Island in decades past in drilling deeper wells does not lend itself to the situation on the east end because our wells are shallow.

In addition to that quantity problem in that respect, we also have a quantity problem from the Southwest Sewer District which is going to be pumping hundreds of millions of gallons on a daily basis into the Atlantic Ocean.

Then in addition to that, we are talking about the situation involving the master plan of Nassau County. That master plan provides a drilling of major well facilities by Nassau County along its border with Suffolk County. You really can't blame Nassau for doing it because New York City did it to them years ago, and Nassau is doing it to Suffolk. We have no way to turn, with the Altantic Ocean to our east.

I would point out in addition to the qualitative problem we have a quantitative problem that highlights the need for preservation of the Long Island pine barrens. I would urge upon the committee to consider the fact that the suggestions made in the Senate bill are really aiming at the heart of Long Island's problem—that is, to do something with water management other than drilling deeper wells, which is all Long Island has done in quite a long time. I really believe that the pesticide contamination problems, the problems from the landfills, the problems from storm water runoff, and the problems with quantity limitations really can only be addressed by the sole source aquifer bill, and we are wholeheartedly in support. As I said, I have no doubt I will have a submission of the sense of the legislature's resolution in that regard to the subcommittee by the middle of next week.

Senator MOYNIHAN. Thank you, sir. I couldn't thank you more. The Senate has gone out of recess and I am required to move an amendment at this moment. They have put in a quorum call pending my dashing over there. I thank each of you for very direct and important testimony. I am glad to see a certain healthy skepticism of Nassau. Yet, remember, if we don't do this together as an island, the only alternative is to bring in vastly expensive mechanical systems from other parts. We will bring in water from Montreal for you, you can do it with electricity. It is a vast important choice being made here, and it is very nice to see the legislatures and the town councils and town legislatures recognizing it. The answer 20 years ago would have been we have no problem today, what are you worrying about. I think that shows a very capable local government. I congratulate you both.

Thank you, sir, and thank your fellow legislators.

With that, and there being no further witnesses, we will conclude this hearing, with special expression of appreciation to all the members of the staff who are going to have to do all this work now.

[Whereupon, at 1:05 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.]

[Statements submitted for the record follow:]

TESTIMONY BEFORE THE TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHTS SUBCOMMITTEE OF THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

UNITED STATES SENATE

March 19, 1982

My name if Robert Neal. I am, by profession, a toxicologist and currently serve as President of the Chemical Industry Institute of Toxicology located in Research Triangle Park, North Carolina. I appear before you today as the current Chairman of the National Drinking Water Advisory Council (NDWAC) of the United States Environmental Protection Agency (EPA). As you know the National Drinking Water Advisory Council is established by the Safe Drinking Water Act. This Council acts to advise the Administrator of EPA on various aspects of her administration of the Safe Drinking Water Act.

At the March 24-25, 1982 meeting of the National Drinking Water Advisory Council, we conducted an extensive review of the Safe Drinking Water Act (SDWA). At this meeting we examined the public comments solicited by EPA relative to the reauthorization of the SDWA. These comments had been elicited by notice in the Federal Register by EPA. In addition, they represented comments which had been given at two public hearings on the reauthorization of the SDWA held in Washington, DC and San Francisco, CA earlier this year. The Council also examined proposed changes to the SDWA containing HR4509 and S1866. As a result of this review, the NDWAC has made a number of recommendations relative to specific issues concerning the reauthorization of the Safe Drinking Water Act. At this time let me summarize these recommendations and the rationale for them.

A key issue in the reauthorization of the Safe Drinking Water Act is the requirement for public notification of violations of the maximum contaminant levels (MCLs), testing procedures, treatment techniques and special monitoring requirements and failure to comply with a variance or exemption compliance schedule. The Council discussed whether the current statute should be changed to modify the circumstances under which public notice was to be given. It is the opinion of the Council that some statutory change is needed to provide EPA the authority to allow greater flexibility to states in administering the public notification provisions of the Safe Drinking Water Act. Specifically, the Council recommends that the Act be modified to allow the EPA to distinguish, by regulation, public notification requirements for minor and intermittent violations from those required for health-related and persistent violations. In addition, the Council recommends the elimination of the requirement for specific modes of public notification allowing the mode of notification to be determined through regulation and with greater variation than is currently allowed depending upon the situation.

Another issue discussed by the Council was whether specific provisions should be made in the Act which would allow flexibility in applying certain

MCLs or monitoring requirements. Examples of the need for flexibility in applying maximum concentration limits would be that in prisons housing only adults there should not be a need to control nitrates since the MCL for nitrate is meant predominantly for protection of infant populations. Another example would be the HCL for fluorides in nursing homes. The fluoride MCL was also meant to prevent malformed teeth in children. As regards this issue, the Council recommends that the MCLs should be uniform for all systems, but that there should be flexibility in monitoring or, in certain rare occasions, in applicability of MCLs built into the regulatory structure. An example of needed flexibility in monitoring is where a naturally occurring contaminant in water has never been detected in a particular system. The Council believes this system should not be required to monitor for that contaminant. As part of this recommendation the Council also strongly supports the practice of issuance of health advisories by EPA as a critical aspect of providing protection to the public on a short-term or interim basis for unregulated contaminants. However, the Council strongly recommends that in the issuance of health advisories, the EPA should arrange for an increased level of scientific review of these advisories and for a periodic review of those advisories that have not, in time, become MCLs. In addition, the EPA should make it clear to the states that these health advisories are not regulations but are merely advice to the states and localities to help them in dealing with unregulated contaminants. It is the Council's opinion that for these recommendations to be put in force would require a change in the SDWA.

The SDWA requires that all MCLs be the same for all systems regardless of size. Yet, treatment technologies which are easily affordable by large systems may be an impossible burden for the smaller systems. The Council is interested in providing relief for those small systems that cannot comply with uniform national standards (MCLs), without opening the door to those that can but do not want to come into compliance. As a result of its discussions, the Council recommends that the SDWA provide for economic variances and also allow greater flexibility to the states to apply variance criteria on a case by case basis. In addition, the Council believes it should be the responsibility of EPA to determine the treatment methods which must be considered when contemplating a variance. However, it is important the EPA not preclude the state from requiring or accepting an alternative treatment method which would bring a system into compliance.

Another question which was the subject of Council discussion was the burden of proof concerning potential adverse health effects that the EPA believes was necesssary to promulgate new regulations to control a particular contaminant. The current language in the Safe Drinking Water Act authorizes the Administrator to regulate "contaminants which in the judgment of the Administrator may have any adverse effect on the health of persons, taking costs into consideration." The Council believes this language is unduly ambiguous and recommends a change in the language to the following: that the SDWA "provide authority to regulate levels of exposure to contaminants which in the judgment of the Administrator pose an unacceptable level of risk to the public health based on sound scientific information on the nature of the risk and taking costs into consideration."

Bill HR4509 would require that proposed and final rules accomplished under the authority of the SDWA be accompanied by a statement of the basis and purpose of the rule which includes a summary of "evaluations of competing risks underlying the proposed rule." The Council is of to the opinion that this type of analysis can be done through the EPA's existing authority and regulatory processes. The Council believes it is an important requirement and should be continued. The Council does not believe any statutory change is needed. However, if statutory change does occur, we believe that the Act should not use the term "competing risk" as it has a technical meaning not compatible with the perceived intent. Rather the Act should refer to including an analysis of any possible adverse health affects of water treatment methods.

Bills HR4509 and S1866 propose requiring the Administrator of EPA to undertake benefit cost analysis as part of the rule-making process. The Council recommends that the language of HR4509 and S1866 be adopted incorporating a requirement for cost benefit analysis in the SDWA. In addition, the Council believes that an evaluation of both direct and indirect benefits and costs should be included.

HR4509 and S1866 propose the deletion of the reference to operation and maintenance of water treatment systems in the definition of a primary drinking water regulation. The Council is in agreement with the intent of these two bills and recommends that the operation, maintenance and provisions of the SDWA be eliminated in the reauthorization.

HR4509 and S1866 propose that the Act be amended to delete the Administrator's authority to require a specific type of technology for use in the treatment of drinking water to remove contaminants potentially hazardous to human health. The Council is of the opinion that the EPA should establish MCLs for the regulation of contaminants when possible. If this is not possible, the EPA should prescribe a variety of appropriate and acceptable technologies. Further, the states, in applying those technologies, should have the flexibility of applying other technologies where they can show a comparable effect. We recommend changes to the SDWA to ensure the application of these policies.

HR4509 and S1866 propose incorporating a series of rule-making procedures in the reauthorization of the SDWA including those currently stated in the Clean Air Act, judicial review of rule-making in the Court of Appeals where the impact of the regulation occurs or in the DC circuit; opportunity for cross-examination during rule-making procedures; requirement for the Administrator to consult with the secretary of HHS and the NDWC and to consider both their advice as well as that submitted by individual NDWAC members; raising the judicial test of the Administrator's rule-making judgment from the "arbitrary and capricious" test to the "substantial evidence" test. The Council recommends that the Safe Drinking Water Act be amended to include those rule-making procedures currently in the Clean Air Act; that judicial review occur in the Court of Appeals where the impact of the regulation occurs or in the DC courts; that cross-examination not be part of public hearings on regulations; that the Administrator be required to consult the National Drinking Water Advisory Council and the secretary of HHS relative to rule-making; the Council does not support the raising of the judicial test for rule-making to "substantial evidence."

HR4509 provides that a time period be specified by the Act within which states must modify their regulations without losing their primacy program grant support. On this issue, the Council recommends that no changes be made to the Act but that the EPA continue its existing flexible policy allowing states to modify their regulations (after the EPA modifies its regulations) without losing their primacy program grant support.

Senate Bill 1866 proposes that the membership of the NDWAC be expanded and that the composition of membership also be changed. Specifically, this bill suggests that the membership be increased to 16, four from the scientific community with expertise in public health and water hygiene, four from state and local agencies concerned with water hygiene and supply, four from the general public, and four from publicly and privately owned water utilities. Further, this bill suggests that notices of vacancies on the Council should be published in the Federal Register and the Administrator must consider nominees provided by the National Academy of Sciences and national organizations representing state and local agencies and suppliers of water. Additionally, the bill suggests that the terms of officers of all current members would expire with the passage of the reauthorization of the SDWA and with the beginning of the terms of office of new appointees; that the terms of members expire if they change jobs and are no longer members of the category under which they were appointed; and that the Council be authorized to elect a chair, adopt rules governing the calling of meetings, procedures at meetings and specify the form of submission of reports to the Administrator, including provisions for minority reports. The majority of the Council recommends that no changes be made to the SDWA provisions establishing the National Drinking Water Council. The majority of the Council felt that the current Act provides the EPA sufficient flexibility in appointing an appropriate range of people in the disciplines and with the perspectives necessary to provide needed advice to the Administrator. The Council also recommends that the NDWAC operating rules not be stipulated in statute but recommends the Council develops its own written operating rules that can only be changed by a vote of the Council. In considering these operating rules, the Council will consider the changes suggested in S1866.

The Council also considered the question of whether the Safe Drinking Water Act should be amended to specifically authorize the EPA to issue opinions on intentional and inadvertent additives to drinking water. The Council agrees that the EPA should maintain an increased effort to provide advice on additives to drinking water. If statutory language is needed to carry this out, the NDWAC would support that provision but the Council believes this option currently resides within the policy and budgetary decision-making of the Agency.

The Council also discussed whether the SDWA provision to designate Sole Source Aquifers should be retained, eliminated or significantly changed. As a result of these discussions, the Council recommends that no change be made in the Sole Source Aquifer program at this time. Since the Agency is now considering a major policy statement on ground water protection, we believe the Council should wait until that statement appears before recommending any changes.

The Council also recommends against adopting the Moynihan and Carney bills on Sole Source Aquifer protection which were recently introduced into the Senate and House. The Council acknowledges there are several worthwhile proposals in the Moynihan and Carney bills, namely 1) the concept of considerable state and local effort is desirable to plan and implement a successful program, and 2) that control of land use can be crucial to controlling ground water contamination and that action is needed now to protect our nation's subsurface drinking water supplies. However, these bills contain provisions which render them unacceptable to the Council. For example, the Council objects to the use of federal monies to purchase land as a method of controlling use of land in a recharge area. Not only is this an expensive and impractical approach but the bills do not specify ownership of the purchased land.

The Council also examined whether the SDWA should be amended to authorize the EPA to issue administrative orders and penalties in states where it has primacy. The Council would support a provision in the SDWA which would give the EPA this authority where it has primacy.

The Council also discussed the issue of the timing of the issuance of the revised primary drinking water regulations. After considerating a number of ramifications of this issue, the Council recommends that the Act be revised to allow the EPA to propose recommended maximum concentration limits (RMCLs) at the same time they propose related MCLs rather than as separate rule-making actions as required by the exisiting regulation.

Finally, the Council discussed whether the grant and loan guarantee provisions of the SDWA should be changed, retained or eliminated. The Council recommends that these provisions should be eliminated as they have essentially not been used in the past. Should financial assistance be provided to water systems, it should not come from the EPA but from the FMHA or some other lending/granting agency.

Respectfully submitted,

Robert A. Neal, Ph.D.
Chairman, NDWAC

Report to the Administrator by the
National Drinking Water Advisory Council

The National Drinking Water Advisory Council met on March 24-25, 1982 to consider and make recommendations on possible amendments to the Safe Drinking Water Act. This Report to the Administrator of the Environmental Protection Agency reflects those recommendations.

The Council bases its recommendations in part on the comments which were provided to EPA during the public review of the Act which took place in January and February. In order to conduct a full review of the issues presented by the reauthorization, the Council created a Legislative and Public Affairs Subcommittee chaired by Leon Williams. Members of the Subcommittee include Fletcher Driscoll, John Ackerman, Fred Elwell and Nina McClelland. Two members of the Subcommittee participated in the public meetings EPA held in early February: Dr. Nina McClelland in Washington, D. C. and Dr. Driscoll in San Francisco. EPA provided the Subcommittee copies of the issue papers which it developed for use in the review, testimonies presented at the meetings, all written comments received by mail, and a summary of the public comments.

Prior to the full Council meeting, the Subcommittee met to develop recommended positions on each issue considered in the public review. These were presented by Mr. Williams at the March 24, 1982 Council meeting. During his presentation, changes in language were recommended by Council members and accepted or rejected by the Council.

The next day, the Council Chairman, Dr. Robert Neal, put each of the recommendations to a vote of the Council. Majority and minority positions taken by the Council are recorded in this Report.

At the Council meeting, the Council made clear that its recommendations reflect its collective experience and concern for the SDWA and its implementation, rather than a mere tallying of the public comments. On some issues, the Council has taken a position somewhat different from the "majority" of the public comments. But, as the EPA Summary pointed out, it is impossible to equate a comment from a large trade association and compare it to that of the director of a large state program, or a member of the consuming public. The Council felt that these comments clarified issues relative to positions different groups held but that it was appropriate for the Council to use its judgment in accepting or rejecting any change to the Act.

The recommendations which follow use EPA's format in presenting the issues for review including a key word identification, a statement of the issue, a brief description of the options considered and the Council's recommendations to the Administrator.

Robert Neal, Chairman

Marian Mlay

Marian Mlay, Acting Executive Secretary

Council Recommendations

Key Word: Public Notification of Violations   **Reference:** S 1414(a)(1)(A)

Problem: The SDWA requires that a public water system give notice to the public for any failure to comply with maximum contaminant levels (MCLs), testing procedures, treatment techniques, special monitoring requirements, or on the existence of variance or exemption provisions and failure to comply with a variance or exemption compliance schedule. The Act specifically defines how often and by what media the notices must be given. The question has been raised whether the uniform public notification requirements may cause public concern where there is no health risk or change in water quality because the violations are minor, infrequent or procedural.

Issue: Should the current statute be changed to modify the circumstances under which public notice is given or to vary the types of public notices required? If so, what provisions should be retained to insure that appropriate public notice be given when serious public health risks are identified?

Options:

Option I - Make no change to the Act, but modify those provisions in which discretion exists.

Option II - Give the Administrator authority to differentiate public notice requirements for minor and intermittent violations from those required for health-related and persistent violations of all kinds.

Option III - Eliminate public notice requirements to the mass media, retaining notice by mail to consumers.

Option IV - Eliminate all public notice requirements in the Act.

Council Recommendation: The Council believes that statutory change is needed to provide EPA the authority to provide greater flexibility to States in administering the public notification provisions of the SDWA. Specifically the Council recommends that the Act be modified to allow EPA to distinguish, in regulation, public notification requirements for minor and intermittent violations from those required for health-related and persistent violations. Further the Council recommends the elimination of specific modes of public notification, allowing the mode of notification to be determined through regulation and with greater variation depending on the situation.

Key Words: Regulatory Framework/ Health Advisories

Reference: 1442, 1445

Problem: The SDWA authorized the Administrator to establish Maximum Contaminant Levels (MCLs) for drinking water and to establish regulations for monitoring to assist in setting regulations and in checking compliance with regulations. Several questions have arisen; one is whether it is necessary to have all systems meet the same monitoring requirements if a contaminant has not been found and is unlikely to be found. Some systems may have no need to meet an MCL if the population to be protected is never present; e.g., male prisons having no infant population should not have to control nitrates. No explicit provision is made for public water systems upon request.

Issue: Should specific provision be made in the Act which would allow flexibility in applying certain MCLs and monitoring requirements and for providing advice on request on unregulated contaminants, eg., a three tiered regulatory structure?

Options:

Option I - Adopt a three tiered regulatory structure which includes uniform national standards for certain contaminants, some degree of flexibility either in monitoring for or applying those MCLs, and health advisories as a formally recognized part of that structure.

Option II - EPA should continue to issue health advisories for use by States and utilities in responding to incidents of contamination by unregulated contaminants.

Option III - Amend the Act to provide specific authority to EPA to issue health advisories and provide flexibility to States in applying certain MCLs.

Council Recommendations: The Council recommends acceptance of the three tiered regulatory structure proposed by EPA with the clear understanding that this structure would not provide for differing MCLs for different kinds or sizes of public water systems. The Council strongly believes that standards should be uniform for all systems, but that for some MCLs, flexibility in monitoring, or in certain rare circumstances, in applicability, should be built into the regulatory structure, eg., where a natural contaminant has never been detected or where the segment of the population which the MCL protects is not served by that particular system (fluorides in nursing homes).

The Council strongly supports the EPA in the issuance of health advisories as a critical aspect of providing protection to the public on a short term or interim basis from unregulated contaminants, with two provisions:

1. EPA arrange for an increased level of scientific review of health advisories, and periodic review of those advisories that do not become MCLs or remain as advisories for an extended period of time.

2. EPA make a greater effort to clarify to the the States and the media that these do not have regulatory effect and are purely advice to the States and localities in dealing with unregulated contaminants.

The Council does not believe that these policies require legislative change.

Key Word: Variances and Exemptions

Reference: Secs 1415, 1416
HR 4509
S 1866

Problem: The Act provides that Maximum Contaminant Levels (MCLs) should be the same for all systems, regardless of size. Yet treatment technologies, which are easily affordable by larger systems, may be an impossible burden for the smallest systems. This problem has plagued the program since its inception. On the one hand, it is unrealistic to pretend that all of these tiny systems will be able to come into compliance. On the other hand, many of these systems do have affordable solutions, such as drilling a new well or connecting to a nearby large system.

Issue: How can relief be provided for those small systems that cannot comply with uniform national standards (MCLs), without opening the doors to those that can but do not want to come into compliance? Should EPA determine what treatment technologies are generally available for the purpose of issuing a variance or should this determination be made by the individual State?

Options:

Option I - Rely on EPA's existing strategy to avoid enforcement actions when there is no feasible remedy.

Option II and III - Adopt a policy whereby for smaller systems, EPA would provide economic guidance for deciding whether technology was available after taking costs into consideration and the State would evaluate the compliance options on a site-specific basis, while retaining requirements for EPA to define generally available technology including costs (building on the approach included in the proposed resolution of the AWWA suite against the THM regulations).

Option IV - Support the proposed amendments which would take from the Administrator and give to the States, the authority to determine generally available treatment methods and allow individual States to inject cost considerations into variance decisions.

Option V - Proposed other approaches to variances and exemptions.

Council Recommendations: The Council recommends that the Act provide for economic variances and greater flexibility for States to apply variance criteria on a case by case basis.

It recommends that EPA determine the treatment methods which must be considered when considering a variance but should clarify that this does not preclude the State from requiring or accepting any alternative treatment method which would bring a system into compliance.

The Act should be modified to negate the EPA General Counsel opinion which requires systems to install a treatment technology and show it does not bring a system into compliance prior to the approval of a variance. Flexibility should be provided in the regulations for States to determine when treatment should be required in such circumstances.

We also recommend that the Act be amended to merge the variance and exemption process into a single variance process which would encompass the criteria for both existing processes.

Key Word: Basis for Standard Setting

Reference: Sec 1401
HR 4509
S 1866

Proposed Amendment: These bills would change the burden of proof on health effects EPA would have to bear in promulgating new regulations. See options for specific language changes.

. Option I - Retain the existing language authorizing the Administrator to regulate "contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons. . . taking costs into consideration."

Option II - Redefine the phrase "any adverse effect. . ." to something like "contaminants which, in the judgment of the Administrator, may be necessary to control to protect public health".

Option III - Adopt the language of these bills which would limit the Administrator's authority to regulate "contaminants" which pose an unreasonable risk to the health of persons.

Council Recommendations: The current language authorizes the Administrator to regulate "contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons . . .taking costs into consideration".

The Council rejects all three options presented by EPA. It believes that some change is necessary, but that the "unreasonable risk" language is inappropriate to the SDWA. In addition, the Council believes the Act should emphasize the need for sound scientific information.

The Council proposes language which would require the Administrator to base the standard on a public policy concept of "acceptable risk" believing that nothing is risk free, neither should an actual threat to the public health or an occurrence be a prerequisite to regulation.

The Council proposes the following language:

> Provide authority to regulate levels of exposure of contaminants which in the judgment of the Administrator pose an unacceptable level of risk to the public health. . . based on sound scientific information on the nature of the risk and taking costs into consideration.

Key Word: Competing Risks Reference: HR 4509

Proposed Amendment: HR 4509 would require that proposed and final rules be accompanied by a statement of basis and purpose which includes a summary of "evaluations of competing risks underlying the proposed rule."

Options:

Option I - Make no changes in the Act and deal with the issues in the rulemaking process.

Option II - Adopt language which requires competing risk evaluation.

Option III - Amend the Act but provide the Administrator discretion in using risk evaluation along with other appropriate analyses in support decision-making.

Council Recommendation: The Council believes this type of analysis can be done through EPA's existing authority and the regulatory process. It is a sound procedure and should be continued. No statutory change is needed.

If statutory change does occur, we believe that the Act should not use the term "competing risk" as it has a technical meaning not compatible with the perceived intent. Rather, the Act should refer to including an analysis of any possible adverse health effects of treatment methods.

Key Word: Benefit-cost Analysis Reference: HR 4509
S 1866

Proposed Amendment: These bills propose requiring the Administrator to undertake benefit-cost analysis as a part of the rulemaking process.

Options:

Option I - Make no changes to the Act and either continue to comply with EO 12291, or not conduct benefit-cost analysis.

Option II - Adopt the proposed language of the two bills.

Options III - Amend the Act to provide the Administrator discretion in using risk evaluation along with other appropriate analyses in support of decision-making.

Council Recommendation: The Council recommends that the language of HR 4509 and S 1866 be adopted incorporating a requirement for cost benefit analysis in the SDWA. The Council believes that an evaluation of both direct and indirect benefits and costs should be included.

Key Word: Operation and Maintenance Regulations

Reference: Sec 1401(i)(D)
HR 4509
S 1866

Proposed Amendment: These bills would delete the reference to operation and maintenance (O&M) in the definition of a primary drinking water regulation.

Options:

Option I - Exclude O&M provisions.

Option II - Leave the Act unchanged and handle through guidance on good practice.

Option III - Leave language unchanged and issue O&M regulations.

Council Recommendation: The Council recommends that the O&M provisions of the Act be eliminated.

Key Word: Treatment Technology

Reference: Sec 1401
HR 4509
S 1866

Proposed Amendment: These proposed amendments would remove the Administrator's authority to require a specific type of technology for use in the treatment of drinking water.

Options:

Option I - Retain the existing language.

Option II - Amplify the conditions under which treatment technology can be required.

Option III - Remove the existing language.

Council Recommendation: The Council believes that EPA should establish MCLs for the regulation of contaminants when possible. If this is not possible, where EPA prescribes treatment technology it should, where applicable, prescribe a variety of appropriate and acceptable technologies. The States, in applying those technologies, should have the flexibility of applying other technologies where they can show a comparable effect. We recommend statutory change to ensure the application of these policies.

Key Word: Administrative Procedures and Judicial Review   Reference: HR 4509
S 1866

Proposed Amendments: These bills incorporate a series of rulemaking procedures into the SDWA including:

- Those currently in the Clean Air Act (CAA) which are generally adopted as policy within EPA:
  - (1) Rulemaking docket
  - (2) A statement of basis and purpose with proposal
  - (3) Contents of docket
  - (4) Provide for oral and written comment
  - (5) Contents of promulgated role
  - (6) Record for judicial review and request for reconsideration
- Judicial review in the court of appeals where impact of regulation occurs, or to these courts of appeal or to the D.C. Circuit
- Opportunity for cross examination during rulemaking proceedings
- A requirement for the Administrator to consult with the Secretary of HHS and the NDWAC and to consider both their advice and that submitted by individual Council members
- Raising the judicial test of the Administrator's rulemaking judgment from the "arbitrary and capricious" test to the "substantial evidence" test.

Options:

Option I - Adopt no changes.

Option II - Adopt only changes currently in CAA. Oppose all others (e.g., cross-examination, judicial review, required consultation).

Option III - Adopt all provisions except cross-examination.

Option IV - Adopt all provisions.

Subcommittee Recommendations: The Council recommends the following to the NDWAC with respect to these issues:

- "CAA" requirements - be incorporated into the SDWA.
- Judicial review in court of appeals where the impact of the regulation occurs - (or to D. C. Courts) - * Ten members supported this amendment based on the rationale that better decisions can be made in the Court where the regulation impact occurs.

  Two members oppose this amendment because of the confusion which would be created by differing decisions from several courts. They believe that the MCL's would be weakened under this arrangement in part because of the likelihood of different MCLs being applicable in different court jurisdictions as a result of these differing decisions.
- Cross-examination requirement - The Council voted 9 to 3 in opposition to the Act being amended to require that cross-examination be a part of public hearings on regulations. Those who oppose the amendment felt it would turn hearings into adversarial settings and seriously inhibit participation by the general public and public interest groups. Those for the amendment see it as a way to expand the public record and clarify facts.
- "Requirement" to consult with NDWAC and Secretary of HHS - The Council recommends support of this amendment.
- Raising the judicial test for rulemaking to "substantial evidence". - The Council does not support this amendment.

* The Council voted 10 to 2 to support this amendment.

Key Word: State Grant Flexibility Reference: HR 4509

Proposed Amendment : The bill would specify the time period within which States must modify their regulations (after EPA modifies its regulations) without losing their primacy program grant support.

Options:

Option I - Adopt language which provides 18 months plus 6 months for States to update their standards to equal minimum federal standards to retain primacy and eligibility for continuing federal grants.

Option II - Make no changes but continue with the same administrative policies.

Option III - Reduce time period for State adoption of federal requirements.

Council Recommendations: The Council recommends that no changes be made to the Act but that EPA continue its existing flexible policy for States to modify their regulations (after EPA modifies its regulations) without losing their primacy program grant support.

Key Word: National Drinking Water Advisory Council Reference: Sec 1446
S 1866

Proposed Amendment: This amendment would expand the membership, change the composition of the National Drinking Water Advisory Council (NDWAC), and prescribe certain operating rules. Specifically:

1. The Council would be increased to sixteen, four from the scientific community with expertise in public health and water hygiene, four from State and local agencies concerned with water hygiene and supply, four from the general public and four from publicly and privately owned water suppliers.
2. Notice of vacancies must be published in the Federal Register and the Administrator must consider nominees provided by the National Academy of Science and national organizations representing State and local agencies and suppliers of water.

3. The terms of office for all current members would expire with the passage of this Act and the terms of office for new appointees specified.

4. The terms of members expire if they change jobs and are no longer members of the category they were appointed to.

5. It authorizes the Council to elect a chair, adopt rules governing the calling of meetings, procedures at meetings and it specifies the form of submission of reports to the Administrator including provisions for minority reports.

Options:

Option II - Retain current act.

Option II - Retain only specific provisions.

Option III - Adopt all provision.

Council Recommendations: The Council voted 9 to 2 that no changes be made to the SDWA provisions establishing the National Drinking Water Advisory Council. Those in support of this position felt that the current Act provided the Agency sufficient flexibility in appointing an appropriate range of people in the disciplines and with the perspectives necessary to provide needed advice. Those supporting the amendment felt that the Council would be better served by having the categories of membership outlined in the Senate bill.

The Council unanimously recommends that the NDWAC operating rules not be stipulated in statute but recommends that the Council develop its own written operating rules that can only be changed by a vote of the Council. In considering these operating rules, the Council will consider the changes suggested in the Senate bill.

Key Word: Additives   Reference: Sec 1442 (a)(2)(B)

Issue: Should the SDWA be amended to specifically authorize EPA to issue opinions on intentional and inadvertent additives to drinking water?

Council Recommendations: The Council agrees that EPA should maintain and increase efforts to provide advice on additives. If statutory language is needed to carry this out, the NDWAC would support that provision, but the Council believes this action lies within the policy and budgetary decision-making of the Agency.

Key Word: Sole Source Aquifer Reference: Sec. 1424(e)

Issue: Should the SDWA provision to designate Sole Source Aquifers be retained, eliminated or significantly changed?

Council Recommendations: The Council recommends that no change be made in the Sole Source Aquifer Program at this time. Since the Agency is now considering a major policy statement on ground water protection, we believe we should wait until that activity matures to consider legislative change.

The Council recommends against the Moynihan and Carney bills on Sole Source Aquifer Protection, which were recently introduced into the Senate and House. The Council acknowledges several worthwhile segments of the Moynihan and Carney Bills namely that (1) the concept of considerable state and local effort is desirable to plan and implement a successful program, (2) control of land use can be crucial to controlling ground water contamination, and (3) action is needed now to protect our nation's subsurface drinking water supplies.

However, these bills contain certain provisions which render them unacceptable. Specifically, the Council objects to the use of Federal monies to purchase land as a method of controlling the use of land in a recharge area. Not only is this an expensive and impractical approach, but the bills do not specify ownership of the purchased land. Further, major Federal ramifications of this land acquisition are unclear, particularly the reference to the Secretary of Defense's responsibility for military installations.

Key Word: Administrative Orders & Penalties Reference: Sec 1414

Issue: Should the Act be amended to authorize EPA to issue administrative orders and penalties in states where it has primacy?

Recommendation: The Council recommends that the NDWAC support a provision in the Act which would give EPA this authority where it has primacy.

Key Word: Revised Regulations Framework

Reference: Sec 1412b
S 1866 (a) (1)

Issues: Should the Act be revised to address the timing of the issuance of the Revised Primary Drinking Water Regulations (RPDWR)? Should the current framework for RMCLs be retained or changed? Should EPA's authority to amend interim regulations be removed? (Note: According to the SDWA recommended maximum contaminant levels (RMCLs) would first be developed by the National Academy of Sciences then reviewed and published by EPA for comment, then promulgated while MCLs are proposed. RCMLs would be essentially health goals, i.e., those levels of contaminants in drinking water that would result in no known or anticipated adverse effects with a margin of safety. MCLs should be as close as feasible to the RMCLs, taking costs and other factors into consideration).

Recommendation: The Council recommends that the Act be revised to allow EPA to propose RMCLs at the same time they propose related MCLs rather than as a separate rulemaking action as required by the existing regulation.

Key Word: Public Water Supply Financial Assistance

Reference Sec. 1442 (e);
1444(d); 1444(a)

Issue: Should grant and loan guarantee provisions of the SDWA be changed, retained or eliminated?

Council Recommendations: The Council recommends that these provisions should be eliminated as they have essentially not been used in the past. Should financial assistance be provided to water systems, it should not come from EPA but FmHA or some other lending/granting agency.

TESTIMONY OF

THOMAS C. JORLING

U. S. SENATE SUBCOMMITTEE ON TOXIC CHEMICALS AND OVERSIGHT

MARCH 31, 1982

Mr. Chairman, Members of the Committee. I am pleased to be here to contribute to your review of the Safe Drinking Water Act and to comment specifically on proposed amendments contained in S.1866. As you know, as Assistant Administrator of EPA for 2 1/2 years from 1977 to 1979 under the leadership of Administrator Doug Costle, I was responsible for the implementation of the Safe Drinking Water Act. I am presently Professor of Environmental Studies and Director of the Center for Environmental Studies at Williams College in Massachusetts.

I am going to confine my remarks to two core issues raised by the proposed amendments. The first dealing with the statutory language controlling the promulgation of Drinking Water standards and the second, dealing with the authority granted to the Administrator under existing law to establish under certain conditions treatment technique requirements to protect public water supplies.

These two issues go to the essence and efficacy of the Statute; other matters, by comparison, are peripheral.

One of the most fundamental duties of public authority is providing safe drinking water for its citizens. The consumption of water represents one of the most direct pathways, and in the event of contamination, most unavoidable exposure of humans to possible harmful effects. Every precaution must be taken to assure that this possibility is not realized; whether the contaminent be a pathogen, a mutagen, teratogen, carcinogen or other toxic chemical.

The efficacy of the principle of preventative measures has been affirmed time and again. Whether it be DDT, Kepone, PCB or formaldehyde foam. The message is clear: we should take action when we have reason to believe a problem could result, rather than only taking action after we know it is a problem. Whether ones concerns are costs or humanitarian, the savings in dollars are incalculable, and the savings in suffering are immeasurable.

The current Safe Drinking Water Act is in accordance with that preventative principle, a sound and established principle of public health protection. The proposed amendments in the two areas I will address would seriously erode that principle. And I must say I find it surprising and perplexing that such weakening changes are proposed in a statute governing a route of exposure to chemicals that is so direct and unavoidable.

If I might start with a few general observations which are necessary to set a context prior to discussing the two specific areas. Statutes establishing fundamental directions in public and environmental health protection should be changed only when significant evidence is presented that such change is appropriate. I believe any fair characterization of the proposed amendments is that they would weaken public health protection. My own view is that they would so weaken that statute as to call into question the efficacy of having any statute at all. But I will attempt to make that case in the context of the two specific areas below.

There is to my knowledge no, and I emphasize NO evidence that the present statute either in its terms or in its implementation is causing any undue hardship. I do not believe any case has been made that the current language of the statute - which is fully in accord with sound public health principles - is operating in a manner inconsistent with the public interest.

The Committee must make that fundamental assessment, and, if it can't find - as I cannot - evidence that the present language is wrong or operating to such an adverse effect on public interest - it should not tamper with it. Among other results tampering will bring new uncertainty, new rulemaking, new litigation, all of which, at the very minimum operate to place the public at increased risk.

My own view of the statute is that it is sound, but that its implementation has been poor. And in saying that I am fully aware that I am necessarily criticizing my own performance as the official responsible for implementation. I believe the Act has not fulfilled its promise to the American people and, rather than proposing weakening amendments, I think the Committee should be demanding that the present language be implemented fully to protect the people. Synthetic organic chemicals, especially, have not been addressed in the current implementation of the law. Such chemicals are present in many drinking water supplies, often in large numbers - that is many different chemicals - as well as in significant concentrations. It was a failure of my administration - it continues to be a failure.

Now let me turn to the two major amendments. The terms of the first of the amendments and related conforming amendments would change the basic test from one where the Administrator is to act when he or she determines a contaminent "may have an adverse effect on the health of persons" to a measure that would authorize action only when a contaminent poses an "unreasonable risk to the health of persons." On its face this may appear to be mere semantics - it is not. It not only changes the mandate to the Administrator, it also delegates to the Executive, I believe improperly, and unwisely,the fundamental determination of what is "unreasonable risk." Let us look at these two elements "risk" and "unreasonable" in turn. Existing law states that when a contaminent is determined to be of a potential to cause adverse effect on the health of persons, actions which are technically and economically feasible should be taken to prevent the harm.

And I should point out that while many synthetic organic chemicals found in public water supplies meet that test none have been subject to protective standards. That fact should cause the Committee concern. Perhaps the statute should be made stronger - not less strong.

The proposed amendment would not allow preventative action to be taken on that basis. Rather, not only must actual quantitative risk be established, it further must be "unreasonable." Let us look at this carefully. First, what does "pose" a risk mean? The change is intended to make it more difficult for the Administrator to act. Instead of examining the potential for harm - or adverse effect - of the chemical, the Administrator would be required notwithstanding likelihood of causing harm, to determine it causes harm, presumably only after empirical cause - effect evidence,before acting and then only if that harm is "unreasonable." Among other results this would represent a policy of establishing the American people as a population of experimental animals. Only when such "hard" evidence of death could be established could the next step be taken still prior to protective action and that is a determination that the established risk is "unreasonable."

And what does "unreasonable" mean? In practice it means methods will be developed to quantify the risk, generally in terms of excess deaths and then some official makes the determination how many such deaths are "unreasonable." That represents a fundamental shift in our Nation's traditional treatment of the value of human life. It represents a fundamental shift in public health protection. If Congress makes the judgement that it wishes to delegate such fundamental decision-making power to the Executive, I recommend that it do so only after it states what number of deaths per thousand or million population Congress believes are "reasonable." If Congress does not, the Executive will increasingly make those judgements by adding to the risk analysis, a benefit-cost analysis in which not only will the reasonableness of a death rate be determined, but an explicit value will be put on human life - a value derived by costing the investment in saving a life and comparing those costs with the benefits of saving life. And again, let me remind you - the representatives of the people - these methodologies and determinations will be made by officials in the Executive Branch. I have stated my view of this delegation in a op-ed article in the Boston Globe which I have appended to my statement.

Such a fundamental shift should be made, if at all, only on the most compelling of evidence. I don't believe that evidence has been supplied to you. In my view it does not exist - certainly not in the case of protection of the Nation's drinking water. I would recommend that if the Committee makes any change to the basic mandate, it should add the concept of"ample margin of safety" to either the existing directive, or to the "unreasonable risk" proposal should the Committee adopt it.

A related change attempts to remove discretionary judgement from the Administrator to act when he or she determines possible adverse effect. The only consequences of the shift that I can ascertain are, 1) to delay by increasing the empirical burden on the Administrator and, 2) to shift the determination to the courts. In my judgement shifting such determinations to the courts not only serves to delay, and increase lawyers income, but shifts public policy formation to the Branch of government least appropriate to make it.

In 1974, Congress recognized,by the character of the authority granted,some of the inherent complexity in establishing safe drinking water standards, especially as it applies to synthetic organic chemicals. These complicating factors include the difficulties associated with the nature of the methods for detection and analysis of especially organic chemicals; difficulties presented by the existence of thousands of such chemicals; difficulties presented by the possible presence in a drinking water source of many such chemicals with possible - almost unknowable so-called synergistic effects; and by the inherent difficulties in ascribing a specific level of safety for each such contaminent when, among other reasons, so many confounding routes of exposure exist, especially in urban areas. The Congressional response to this complexity was to authorize the Administrator to impose in the alternative to, or in conjunction with maximum contaminant levels (MCL's), treatment techniques or a methodology that would remove, to the extent technically and economically feasible, a broad array of chemicals. I do not believe anything has changed since that judgement was made. And while EPA proposed a treatment technique regulation for organics in 1978, that proposal has never been finalized. Deleting the authority to set treatment standards could be justified only if there was an alternative mechanism that was as efficacious, or it could be shown that such authority wasn't necessary. Neither of those situations prevail.

During my service as Assistant Administrator I served as a hearing officer on the proposed organic treatment regulations. I listened to many water utility officials protest the proposed treatment technique. I believe the inclusion in the Bill S.1866 of a repealer of the authority is a further manifestation of their protests. But I don't think there is substance behind their protests. Nothing has occurred to reduce the complexity, nothing has occurred that indicates an alternative is superior or even as good as the authority granted in 1974. Nothing has happened to indicate the presence of organic contamination has diminished. Most communities still don't monitor for the broad array of organic contaminents, including some of the loudest protesters, as if by not finding them somehow makes water magically safe. If those communities would sample their water on a systemmatic basis - and in some communities often upwards of 200 synthetic organic chemicals are found in varying concentrations - and notify the consuming public, both the utilities and more importantly their customers - would be more responsive to treatment, to protection.

I also believe the treatment techniques, including specifically GAC, have been proven. It is the general control strategy that would be used to meet maximum contaminent levels if and when such could be established for individual organic chemicals. I think it would be folly to delete that authority on such flimsy evidence. Again, I suggest that your more appropriate line of inquiry should be demanding a justification from EPA, why it hasn't been used.

The contamination of public drinking water supplies is a growing - not diminishing - problem. Attention is most frequently focused on contaminated ground water as a result of releases of hazardous waste. Surface water supplies continue to be subject to contamination especially by synthetic organic chemicals. The Administration has put the BAT toxic water pollution control program on hold, or worse. The hazardous waste program under R.C.R.A. is a quagmire of uncertainty. Last week in Massachusetts an official of a leading hazardous waste management firm, the IT Corporation of Wilmington, California, said EPA's proposed actions on hazardous waste would "create a swamp of hazardous waste." Pretreatment programs have ground to a halt. Pesticide controls both at the manufacturing and the operational/field application end have been weakened or rendered non-existant. The controls expected under TOSCA have not been applied. And this failure to control the release of chemicals into the environment is taking place against a backdrop of an unprecedented chemical revolution. The figures should be familiar to you. As recently as 1930 synthetice organic chemical production in the United States was measured in quantities of a few hundred thousand pounds of total production annually. Now the U.S. production of such chemicals is over 330 billion pounds annually! The implications are obvious to mere common sense: even with rigorous controls huge amounts of chemicals will be released to the environment as by product waste or carelessness, or as disposal following use. Without controls the problems are simply horrendous. We can manage chemicals in a way to enjoy their benefits and prevent either short or long term release to the environment and consequent exposure to humans. The Safe Drinking Water Act is an essential link in that management structure. It should not be weakened. Its implementation should be strengthened.

I want to repeat my basic theme. Change statutes only when there is clear and compelling evidence change is necessary in the public interest. The performance of environmental and health protection programs can only be delivered and delivered economically and reasonably if there is stability and credibility in their operation. Rapid change without compelling evidence weakens resolve, and weakens respect for law. It also produces delay and confusion. And often ultimately transfers the establishment of public policy to the Courts. The Safe Drinking Water Act as currently written accommodates economic and social impacts. There is no need for change in either the basic mandate to set standards or in the authority to establish treatment techniques.

Thank you, I'll be happy to answer questions Members of the Committee might have.

ENVIRONMENTAL DEFENSE FUND

BEFORE THE UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT COMMITTEE

COMMENTS ON THE REAUTHORIZATION OF THE SAFE DRINKING WATER ACT

by: James T.B. Tripp, Counsel
Environmental Defense Fund, Inc.
444 Park Avenue South
New York, New York 10016
212-686-4191

Date: March 31, 1982

1. Introduction

The Congress enacted the Safe Drinking Water Act, 42 U.S.C. Section 300f, in 1974 in the face of mounting evidence that many municipal water supply sources in the country were contaminated, in particular with man-made synthetic organic chemicals, and that water utilities generally had not installed treatment technologies to remove such contaminants. The Act was therefore an expression of national concern about the impact of the post World War II chemical revolution on public water supply sources. It represented the first such Congressional effort since public health officials learned to protect the quality of drinking water sources to prevent transfer of communicable viral diseases.

The theory of Part B of the Act was that the U.S. Environmental Protection Agency would establish maximum contaminant levels for pollutants of concern, that the National Academy of

Sciences would conduct a study to recommend maximum contaminant levels of a wide range of toxic organic chemicals and other pollutants and that, armed with these MCLs, EPA would impose treatment technology requirements on communities whose water supply sources were contaminated. Part C of the Act established a state administered underground injection control program subject to EPA guidance, as well as the sole source aquifer program (Section 1414(e)). Part E prescribed EPA research and studies and the establishment of the National Drinking Water Advisory Council.

2. Overview Of Implementation Of The Safe Drinking Water Act

Since the Act was enacted in late 1974, and more than seven years have transpired, it is fitting to ask how effectively the Act's programs have been implemented. Since 1974, EPA has conducted several major sampling programs of surface and ground water supply sources, with a focus on man-made toxic organic chemicals. It has presently underway a 1,000 sample national monitoring survey to assess the national extent of contamination of drinking water supplies with man-made volatile organic compounds.[1] This information has been invaluable to our nation, and we strongly urge a high level of budgetary support for such research and studies. In addition, EPA has promulgated a limited number of MCLs,[2] and the National Academy of Science, pursuant to Section 1414(e)(1), conducted an extensive study of the potential health effects of drinking water contaminants,[3] a report which contained no specific recommended MCLs. However, to our knowledge, no community has installed treatment technologies specifically designed to remove man-made toxic organic chemicals. Nor do we anticipate a great stampede by communities with water supply sources contaminated with toxic organic chemicals to install such equipment.

3. Conceptual Flows In The Legislative Framework Of The Safe Drinking Water Act

Why is the record of program implementation and enforcement under the Safe Drinking Water Act so bleak while the data about toxic organic contamination of drinking water sources gathered by EPA has aroused the nation? Indeed, in my opinion, concern about toxic contamination of surface and groundwater sources is greater today throughout the country than it was in 1974.

The reason for the bleakness of the implementation record is that the Act is conceptually flawed. If EPA carried out the task of prescribing MCLs for all health-related drinking water contaminants, the cost of compliance with the resulting treatment requirements by thousands of large and moderate-sized water supply systems would be substantial. Yet, in contrast to the construction grants program established under Section 201 of the Clean Water Act, 33 U.S.C. Section 1281, the federal government under the Safe Drinking Water Act provides no construction funds whatsoever. Federal regulatory requirements imposed on municipalities with no carrots in the forms of federal funds have never been popular. They are typically resisted.

Further, the drinking water sources of communities which are contaminated with man-made toxic chemicals are typically not responsible for that contamination. Thus, they may legitimately question why they should bear the cost of cleaning up pollution caused by others, particularly with so little federal funding support. In this respect, Part B of the Safe Drinking Water Act is different in concept from virtually all other environmental legislation enacted since 1970. All other statutes -- the Clean Air Act, the Clean Water Act, the Resource Conservation Recovery Act, the Ocean Dumping Act and others -- impose controls on dischargers of pollutants into air, surface waters, ground water and the ocean. Indeed, Part C -- "Protection of Underground Sources of Drinking Water" --adopts this approach in theory. Concomitantly, the costs of complying with technology-based pollution control requirements are imposed on those responsible for producing, transporting or disposing of the pollution. This approach is eminently sound in an economic, political and ethical sense.

The Safe Drinking Water Act approach of expecting someone who uses a public resource, like water or air, to clean it up is problematic. A Superfund which imposed all costs of clean-up of abandoned landfills on the luckless communities in which they happened to be situated, subject to federal fiat, with no federal financial support, might be analogous.

4. Absence Of A Clear Potable Water Policy

Finally, the Safe Drinking Water Act is conceptually flawed because, its title notwithstanding, it is not a comprehensive drinking water act. In Part B, it deals only with clean-up of polluted water sources. It could more properly be denominated the "Polluted Drinking Water Supply Clean-Up Act." Even such a title might be generous since, although technologies, such as GAC, exist for removing toxic organic chemicals, there is little assurance that such technologies will remove all such toxics to a level where no health effect will occur. The wiser course is still to prevent the discharge of the toxics into the water supply source in the first instance. A Safe Drinking Water Act should be, instead, a comprehensive piece of legislation primarily designed to protect the quality of drinking water sources -- both surface and ground. The Safe Drinking Water Act does this only in a rather limited manner. Part C establishes a program for controlling one source of contamination of groundwater supplies, to wit, underground injection wells, and, in the case of sole source aquifers designated under 1414(e), potential sources underwritten by the federal government.

It could be said that the Safe Drinking Water Act does not have to address other sources of contamination of surface and ground water supply sources since programs established under the Clean Water Act, RCRA, TOSCA, Superfund, FIFRA and the Surface Mining Control and Reclamation Act do so. Yet, this response is only partially accurate since these laws do not establish as a clear goal the protection of the quality of drinking water sources. Indeed, approximately 50% of the residents of this country obtain their drinking water from the ground; yet, no statute establishes as a clear objective maintenance or restoration of the quality of groundwater actually or potentially useful as a drinking water source.

The absence of any clear Congressional mandate about and clear conceptual framework for addressing groundwater quality is a major factor behind the difficulties which EPA has encountered in implementing regulatory programs affecting groundwater under the Clean Water Act, RCRA, Part C of the Safe Drinking Water Act, TOSCA, the Surface Mining Act or Superfund. [4/] Furthermore, while the Clean Water Act establishes as a clear goal the protection of water quality suitable for contact recreation and propagation of fish and wildlife, [5/] except for scant references, [6/] it establishes no comparable goal for the protection of water suitable for potable use (unless the "no discharge" goal is to be construed as serving this function).

In the absence of a clear statement of groundwater quality policy, we expect that EPA will continue to encounter difficulties in implementing regulatory programs under RCRA, Part C of the Safe Drinking Water Act and other statutes, where the primary resource which will be affected is groundwater.[7/] In the absence of a clear statement of Congressional ground and surface water quality policy, we expect that EPA will continue to experience mammoth obstacles in its efforts to implement Part B of the Safe Drinking Water Act.

5. Need For A Comprehensive Drinking Water Safety Law

The country needs and wants a comprehensive drinking water safety law. The federal government has played a major and legitimate role in the provision of potable water historically, largely through its efforts to prevent the transfer of communicable diseases by water. Because of limited expertise, the federal government has a major and legitimate role to play in the provision of potable water free of toxic chemicals in toxic amounts.

The Safe Drinking Water Act should therefore be amended to include a clear Congressional policy and statment of objective on potable water quality, and a program or process for achieving that objective consistent with the policy. In my opinion, the Congressional policy should be that every person in this country should be able to enjoy high quality, potable water free of man-made toxic organic chemicals, communicable disease agents and other drinking water contaminants. The objective should be the maintenance, protection and restoration of the quality of the country's present and future ground and surface drinking water supply sources. The program should have three major components:

(1) the prevention of degradation of high quality ground and surface present and future potable water supply sources;

(2) institution of controls on major point and non-point sources of contamination contributing to the pollution of ground and surface present and future water supply sources;

(3) the clean-up of ground and surface water supply sources through installation of appropriate treatment techniques.

At the present time, Part B of the Safe Drinking Water Act emphasizes (3) only. Instead, the Act should be rewritten as a comprehensive groundwater recharge and surface watershed protection program for present and future potable water sources. Unfortunately, because Part B of the Safe Drinking Water Act focuses solely on (3), namely, clean-up, the MCL scheme has been used as an excuse to degrade high quality potable water sources and to promote introduction of contaminant sources into critical surface and groundwater recharge watershed areas.[8] Because of this problem, we question the wisdom of linking drinking water quality standards to treatment requirements the costs of which are to be borne solely by local communities or water utilities. The opposition from communities and water utilities to federal regulations which impose direct costs on them means that the drinking water regulations are lax and non-comprehensive. Where a regulation considers cost of treatment for communities like New Orleans, Louisiana or Louisville, Kentucky, the water supply sources of which (the Lower Mississippi and Ohio Rivers, respectively) contain large quantities of toxic industrial wastes, municipal runoff and agricultural pesticides, it may be totally unreasonable as a management tool for a potable water source with a large protected watershed.

The establishment of such a framework or process for articulating groundwater quality policy and objectives as it relates to groundwater would also facilitate the development by EPA of coherent regulatory programs for hazardous waste facilities under

RCRA, deep well injections under Part C of the Safe Drinking Water Act and other sources of groundwater contaminants.[9/] The articulation of such a framework would also assist the states and local units of government in implementing these regulatory programs and establishing their own groundwater protection strategies.

6. Control of Pollution at Source

Expansion of the Safe Drinking Water to include a statement of policy, a clear objective and a three-tier program, as I have described above, would also have the beneficial affect of focusing attention on the origins of contaminants of health concern in drinking water sources, not solely the quality of those sources and treatment technologies necessary to distribute potable water. This orientation towards prevention of contamination of ground and surface drinking water supplies, in addition to treatment and clean-up now incorporated in Part B of the Safe Drinking Water Act, has three basic policy consequences we consider national drinking water quality policy in the context of surface water and groundwater recharge watershed policy.

First we have to recognize that a regulatory policy regarding the siting of major sources of toxic contaminants, such as industrial impoundments and surface water discharges, landfills and underground injection wells, is at least as important as engineering design and monitoring policy. Siting of such facilities in the surface or groundwater recharge watershed areas of present or future surface and groundwater sources (as well as high quality ground or surface waters which serve significant ecological functions) should be prohibited. Under the best of circumstances, industrial impoundments, landfills and underground injection wells leak. Accidents may occur. Monitoring of groundwater to detect operational deficiencies is expensive and an imperfect science at best. All of the EPA, RCRA and Safe Drinking Water Act Part C regulations could be strengthened if the importance of the siting factor were explicitly recognized. Indeed, if the Safe Drinking Water Act were amended, as we propose, siting should be expressly identified as a critical factor in the effort to control discharges of toxic materials at source. In this context, by way of example, EPA underground injection well regulations should prohibit placement of such injections where fluid wastes may migrate, in any direction, to a present or future underground drinking water source. When and if the science of hydrogeology and underground organic chemical transport mechanisms becomes perfected, we can contemplate relaxation of such a prohibition. We should avoid such needless risks now.

Second, implementation of the Safe Drinking Water Act must be related to enforcement of other state and federal environmental statutes which are designed to control discharges of contaminants of public health concern into present or future surface or groundwater potable water supply sources. These statutes include the Clean Water Act, in particular Sections 402, (NPDES permits) and 404 (discharges into wetlands), 33 U.S.C. Section 1342 and 1344, RCRA, Part C of the

Safe Drinking Water Act, TOSCA, the Surface Mining Control and Reclamation Act and FIFRA.[10] Third, in order to relate the programs to the Safe Drinking Water Act, we would propose an amendment to the Safe Drinking Water Act which would establish procedures, comparable to but stronger than those set up under Sections 110(a)(2)(E) and 126 of the Clean Air Act, which would allow any community with a contaminated water supply to institute administrative and judicial actions against any upstream source (within its surface waters watershed or groundwater recharge watershed area) discharging in measurable quantities a contaminant of public health concern, found in that community's water supply source.

7. Protection of Critical Groundwater Recharge Watershed Areas

In the three-tier program described above, we have identified the importance of maintaining high quality potable water sources with protected, reasonably undeveloped critical surface water or groundwater recharge watershed areas. Although many communities or private water utilities in the Northeastern and Northwestern states acquired watershed lands to protect surface water supplies starting in the 19th century, no comparable historic movement to protect critical groundwater recharge watershed areas has existed.

Interestingly, in enacting Section 1424(e) of the Safe Drinking Water Act, the so-called sole source aquifer provision, the Congress took an important first step in rectifying this deficiency.

Section 1424(e)is the only provision in federal law, to our knowledge, that utilizes the term "recharge zone" and recognizes that the long-term quality of a groundwater source depends on control of contaminant sources in its recharge zone.

The sole source aquifer program has not been effectively implemented or utilized to accomplish its bold purpose for several reasons. First and foremost, it is not part of any broad groundwater protection legislative framework. We have suggested how this defect could be remedied through the inclusion in the Safe Drinking Water Act of a clear groundwater quality policy, objective and three-tier program. Further, EPA has not promulgated any final regulations covering sole-source designation and project review under Section 1424(e), perhaps in part because of the lack of a clear national groundwater protection policy. The proposed regulations [11/] unfortunately define "significant hazard to public health" in terms of MCLs set forth in any promulgated national primary drinking water standard,[12/] hardly an adequate measure of protection for a high quality groundwater source relatively free of contamination by toxics, nitrates or salts. Finally, Section 1424(e) empowers review of only "commitments for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise".

We therefore strongly support the initiative which Senators Moynihan, D'Amato, Baucus, Gorton and Randolph have taken in introducing S.2131, a bill "to amend the Safe Drinking Water Act, to provide for the protection of certain recharge areas overlying sole source underground water supplies."[13/] We applaud S. 2131 for several reasons. First, it sets forth a policy and a set of findings on the importance of protection of the quality of groundwater as a potable water source. Second, it recognizes that, within a large groundwater recharge watershed area, critical areas, denominated as "special protection areas", deserve special attention, that stringent land use controls on all residential, commercial and industrial development in such areas may be warranted and that, as a consequence, affected local units of government and the state must be intimately involved in the development and implementation of comprehensive management plans for such areas.

Third, we support authorization of federal funds, not only for acquisition of lands in special protection areas, but also as seed capital for a land credit exchange institution to facilitate, promote and lubricate exchange of partial interests in land. Any meaningful plan for a special protection area which still retains a reasonably natural vegetative system and subsurface geology must impose strict limits on development. Therefore, any such plan will probably designate development nodes or regional growth centers where development will be encouraged. If such plans for protecting natural systems are to work and be acceptable politically, this country must develop mechanisms and institutions for exchanging and transferring land credits as a tool for restricting and encouraging growth in appropriate sites. An important and innovative step in this is the establishment of the Burling County, New Jersey, Conservation Easement and Pinelands Development Credit Exchange Board.[14/] S. 2131 could support this kind of local initiative. In the process, limited federal funds could be used to maximize advantage in local and state programs in critical groundwater recharge watershed areas. Utilization of such funds for this purpose could have far greater impact than their use solely for land acquisition.

We therefore strongly endorse S. 2131. Indeed, we would urge the Congress to consider a comparable program for critical surface water supply watershed areas.

8. Other Comments on Proposed to the Safe Drinking Water Act

We attach as Exhibit A a copy of our comments on the EPA Office of Drinking Water's Public Review of the Safe Drinking Water Act, dated February 3, 1982. It includes comments on various proposals to amend the Act.

CONCLUSION

Implementation of Part B of the Safe Drinking Water Act has been frustrated because the Act does not establish a clear potable water policy, anobjective and comprehensive program for protecting, as well as, cleaning up surface and ground present and future potable water sources. Likewise, implementation of Part C has been frustrated because of the lack of any clear groundwater quality policy, objective or framework for instituting a local or state process for establishing such a policy.

The Safe Drinking Water Act should therefore be amended to become a comprehensive potable water source protection program. In addition, siting of underground injection wells (and other major sources of toxic and hazardous contaminants) should be expressly recognized as a critical factor in Part C regulations. Furthermore, S. 2131 should be enacted. Finally, the on-going potable water quality research, studies and monitoring efforts of EPA must be continued and strengthened.

FOOTNOTES

1/ EPA,40 CFR Part 141, National Revised Primary Drinking Water Regulations, Volatile Synthetic Organic Chemicals in Drinking Water, 47 Fed. Reg. 9350,9352 (Thursday, March 4, 1982).

2/ 40 CFR Part 141 Subpart B.

3/ National Academy of Sciences, Drinking Water and Health,(June 1977). The summary to this report was published at 42 FR 35764 (July 11, 1977).

4/ See Tripp, J.T.B. and A.B. Jaffe, "Preventing Groundwater Pollution: Towards a Coordinated Strategy to Protect Critical Recharge Zones," 3 Harv. Env. L. Rev. 1, (1979), at p. 24.

5/ Section 101(a)(2) of the Clean Water Act, 33 U.S.C. Section 1251(a)(2), the so-called "swimmable fishable goal".

6/ See, e.g., Section 303(c)(2) of the Clean Water Act, 33 U.S.C. Section 1313(c)(2).

7/ Obviously, EPA budgetary shortcomings are also a major factor contributing to delays and confusion in the implementation of such programs. See, National Wildlife Federation, Shredding the Environmental Safety Net: The Full Story Behind the EPA Budget Cuts (February 4, 1982).

8/ See, e.g., Bridgeport Hydraulic Company et al., v. Council on Water Company Lands of the State of Connecticut, 453 F. Supp. 942 (D. Conn. 1977), aff'd. 99 S. Ct. 606 (1978).

9/ See Tripp and Jaffe, supra, n. 4 at 24-25 and 36-38.

10/ Acid precipitation is also a source of contamination of surface and groundwater supplies. See, Fuhs, G.W., and R.A. Olsen, "Acid Precipitation Effects on Drinking Water in the Adirondack Mountains of New York State". Technical Memorandum, NYS Dept. of Health: Albany, N.Y. (May 1979); Fuhs, G.W., "A Contribution to the Assessment of Health Effects of Acid Precipation". (Presented at the Action Seminar on Acid Precipitation: Toronto, Canada (November 1-3, 1979); Fuhs, G.W., et al., "Distribution of Mercury and 14 Other Elements in Remote Watersheds in the Adirondack Mountains, N.Y.", presented at the Second Chemical Congress of the North American Continent at Las Vegas, NV (August 24-29, 1980). Thus, proper enforcement of the Clean Air Act is also of concern for the protection of potable water supplies.

11/ 42 Fed. Reg. 51, 620 (1977)(to be codified in 40 CFR Part 148).

12/ 42 Fed. Reg. 51, 620 (1977)(to be codified in 40 CFR Section 148.2(j)). See, Tripp and Jaffe, n. , supra, at p. 17.

13/ We support Section 502 of the 1978 National Parks and Recreation Act, 16 U.S.C. Section 471(i), establishing the Pine Barrens of New Jersey as a national reserve in recognition of the high quality and huge volume of its groundwater, as well as its unique ecology, for similar reasons.

14/ See the Burlington County Conservation Easement and Pinelands Development Credit Exchange Board Procedural Guide, Burlington County Board of Chosen Freeholders (February 1982).

TESTIMONY OF

JACQUELINE M. WARREN

NATURAL RESOURCES DEFENSE COUNCIL

The Natural Resources Defense Council (NRDC) is a national non-profit environmental organization supported by 40,000 members dedicated to protecting public health and preserving the quality of the natural environment. Since its inception in 1970, NRDC's staff scientists and attorneys concerned with toxic substances control have sought, through legislative, administrative and judicial proceedings, to achieve a reduction in involuntary human exposures to carcinogenic and other toxic environmental contaminants. With respect to water, these efforts have focused upon obtaining controls on pollution at the source, under the Clean Water Act, and at the tap, under the Safe Drinking Water Act (SDWA). We appreciate this opportunity to present our views on the current state of implementation of the Act.

Congress passed the SDWA at the end of 1974, in response to a widespread national controversy over the extensive presence of organic chemicals, many of which are carcinogenic, in drinking water supplies throughout the United States. Since then, the evidence that our water supplies are contaminated by dangerous organic and inorganic chemicals has continued to mount. Organic chemicals such as trichloroethylene, tetrachloroethylene, vinyl chloride, carbon tetrachloride, dieldrin, chloroform, kepone, and benzene have been frequently detected in drinking water. Although the National Academy of Sciences has identified as carcinogens 22 of the chemicals found in drinking water, and many others are known to be mutagenic or otherwise toxic, the vast majority of the estimated 700 chemicals so far detected in drinking water have not yet been tested to determine their toxicity. Moreover, we now know that our groundwater supplies, upon which half the U.S. population depends for drinking water, are heavily contaminated with industrial chemicals.

The sources of contaminants in groundwater include disposal of hazardous wastes in landfills and industrial surface impoundments (pits, settling ponds and lagoons); septic tanks and cesspools and the chemicals used to clean them; municipal wastewater; mining activity; petroleum exploration and development; and agricultural, street and urban runoff. Because groundwater lacks the self-cleansing properties provided to surface water by dilution, circulation and degradation by sunlight and aquatic organisms, groundwater can remain contaminated for centuries. Furthermore, concentrations of contaminants in groundwater can be orders of magnitude greater than levels found in surface water. For example, according to a recent Council on Environmental Quality (CEQ) report,[1] the highest level of trichloroethylene so far measured in surface water was 160 ppb. By contrast, the highest level found in groundwater was 35,000 ppb.[1]

---

[1] Contamination of Groundwater by Toxic Organic Chemicals, CEQ, 1981.

In light of the potential human hazards posed by exposure to a broad array of dangerous chemicals in drinking water, Congress adopted a preventive approach in the SDWA which requires that uncertainties be resolved on the side of protecting public health. We believe that the preventive approach of the SDWA is a valid one and should be preserved. As a matter of policy, it favors protecting public health rather than placing the public at continuing risk. The alternative, waiting until the link between disease and consumption of chemically-contaminated drinking water is conclusively proved, is contrary to accepted preventive health philosophy and could impose an unnecessary and unconscionable social cost in terms of future human pain and suffering.

The Environmental Protection Agency's (EPA) record in implementing the SDWA, and especially the Agency's continuing failure to establish primary drinking water regulations for organic chemicals, is deserving of strong criticism. Since 1975, EPA has issued only a very short list of maximum contaminant levels (MCLs). The list includes a few pesticides and herbicides, a small number of inorganic chemicals, a standard for coliform bacteria, turbidity, radionuclides, and, since 1979, trihalomethanes.[1] Earlier this month, EPA published an Advance Notice of Proposed Rulemaking (ANPR) discussing the possibility of establishing MCLs for organic chemicals that have been widely detected in groundwater. The ANPR is not, however, a proposed rule, and in fact, asks whether there is any need for the Agency to issue standards for organics in drinking water. In 1978 EPA concluded that there was sufficient evidence to warrant such action, and proposed a rule for control of synthetic organics in drinking water. Now, four years later, the Agency is questioning whether organics in drinking water pose any problem. This turnabout in the face of growing evidence of the prevalence and potential hazards of organics in drinking water raises serious doubts about the prospects for any controls on organics in the foreseeable future.

---

[1] National Revised Primary Drinking Water Regulations, Volatile Synthetic Organic Chemicals in Drinking Water, Advanced Notice of Proposed Rulemaking, 47 Fed. Reg. 9350 (March 4, 1982).

The consequences of EPA's failure to establish standards for organic chemical contaminants in drinking water are very serious. First, because the establishment of standards is a necessary prerequisite for triggering monitoring of drinking water quality, water suppliers are not presently monitoring the water they sell for organic chemical contamination. The only contaminants they look for are those presently covered by the

---

[1] See National Interim Primary Drinking Water Regulations, published at 40 CFR 142. The trihalomethanes standard is presently in effect for systems serving 75,000 customers or more, but systems serving 10,000 - 75,000 do not have to be in compliance until November, 1983.

Interim Regulations. Thus, unless chemical contamination is so gross as to cause taste, odor or public health problems, water utilities across the country do not monitor and, accordingly, do not know the chemical quality of the water they provide.

Second, and equally important, other regulatory programs designed to prevent contamination of groundwater are keyed to the Primary Drinking Water Regulations. Under the Resource Conservation and Recovery Act (RCRA), leachate from landfills is only tested for the presence of chemicals included on the list of drinking water standards. Since most of the chemicals presently found in groundwater believed to have been contaminated by the burial of hazardous waste are not on the list, reliance on the Primary Drinking Water Regulations to protect groundwater against leaking landfills is misplaced. To illustrate, a landfill leachate containing trichloroethylene and tetrachloroethylene two of the most widely detected groundwater contaminants, would not be tested for those compounds because they are not on the list of drinking water standards. Thus, landfill leachate could successfully meet the requirements of RCRA although it was heavily contaminated with dangerous chemicals.

The Underground Injection Control (UIC) program, established by the SDWA to prevent groundwater contamination by underground injection wells, is also keyed to the Primary Drinking Water

Regulations. Under EPA's UIC regulations, migration of fluids from injection wells into underground sources of drinking water is permitted unless "the presence of that contaminant may cause a violation of any primary drinking water regulation or may otherwise adversely affect the health of persons." 40 CFR §122.34(a). This provision permits the leaching of injected liquid wastes into underground drinking water supplies until contamination levels either violate one of the few national primary drinking water standards so far promulgated by EPA, or else pose an actual threat to human health. Not only does this approach directly contravene the preventive intent of the Safe Drinking Water Act, but it virtually guarantees that groundwater contamination from underground injection activities will continue.

In our view, there is an urgent need for the establishment of comprehensive drinking water standards to protect public health against contaminated drinking water. Instead of addressing that need, however, S.1866 would greatly weaken the SDWA in several ways: (1) it would change the standard-setting basis for promulgating drinking water regulations from a preventive to a reactive standard; (2) it would prohibit the Administrator from prescribing a treatment technology where establishment of a MCL is infeasible or impractical; (3) it would delegate to the states the determination of which technologies are "generally available", thereby defeating the SDWA's primary goal of establishing uniform minimum requirements for drinking water quality nationwide; (4) it would eliminate the Administrator's authority to amend the Interim Primary Drinking Water Regulations; (5) it would delete the Administrator's authority to prescribe minimum requirements for the operation and maintenance of drinking water facilities; (6) it would establish a three year period during which a state could retain "primary enforcement responsibility" under the Act and remain eligible for federal grants without enforcing compliance with new or amended drinking water regulations; (7) it would change the composition of the National Drinking Water Advisory Council to one dominated by the water supply industry; and (8) it would alter and unnecessarily complicate procedures for the issuance of drinking water regulations and for judicial review.

1. Alteration of the Standard-Setting Basis for Promulgating Drinking Water Regulations

The SDWA presently requires the Administrator to issue regulations for "each contaminant which in [the Administrator's] judgment...may have any adverse effect on the health of persons." 42 U.S.C. §300-1(b)(1)(B). This language embodies the preventive philosophy and intent of the SDWA, as the House Report explained:[1]

---

[1] H.R. Rep. No. 93-1185, 92nd Cong., 2d Sess. 10 (1974).

> The words used by the Committee were carefully chosen. Because of the essentially preventive purpose of the legislation, the vast number of contaminants which may need to be regulated, and the limited amount of knowledge presently available on the health effects of various contaminants in drinking water, the Committee did not intend to require conclusive proof that any contaminant will cause adverse health effects as a condition for regulation. Rather, all that is required is that the Administrator make a reasoned and plausible judgment that a contaminant may have such an effect.

Section 3 of S.1866 would change this basic requirement from one applying to contaminants which "may have any adverse effect on the health of persons" to one applying to contaminants which "pose an unreasonable risk to the health of persons." Not only does this change to the present tense effectively repeal the precautionary nature of the Act, but the substitution of the "unreasonable risk" standard would also require the public to be subject to serious documented hazards before the EPA could act to reduce the danger. Since under §3 an unreasonable risk must arise before mitigating action could even be initiated, the public could not be protected until the level of exposure and the likelihood of harm became "unreasonable."

The legislative history of the SDWA clearly shows that a preventive approach to regulating potentially carcinogenic exposures to organic chemicals in drinking water is what Congress intended. Because of ethical and humanitarian constraints on testing with human subjects, we may never have the kind of evidence the unreasonable risk standard would require as a prerequisite to regulation for most of the organic chemicals in drinking water -- even those we know today to cause cancer in animals. Yet, the social cost of permitting the exposure to continue could be serious harm to human health twenty years hence due to the long latency period of cancer. Weighed against this is the dollar cost of compliance with a primary drinking water regulation, which under current law must be feasible in terms of both technology and cost before it may validly be promulgated. See SDWA §1412(a)(2), 42 U.S.C. §300g-1(a)(2).

Altering the standard for issuing regulations to an "unreasonable risk" standard would also create an anomaly in the statute. Variances and exemptions cannot be granted under the SDWA as now written if doing so would create an "unreasonable risk to health." See 42 U.S.C. §§300g-4(a)(1)(A), 300g-5(a)(3). Yet, if S.1866 were enacted, drinking water regulations themselves would be based on an unreasonable risk standard. Presumably, the variance and exemption provisions would become inoperative, unless they were amended so that an even lower minimum standard would be applicable to them.

2. Deletion of the Administrator's Authority to Prescribe Treatment Techniques in Lieu of Maximum Contaminant Levels

S.1866 would eliminate the Administrator's authority to prescribe use of a particular treatment technology in cases where setting a maximum permissible contaminant level was prohibitively expensive or technologically impossible. The House Commerce Committee's report on the original SDWA identified two examples where monitoring might be judged "infeasible":[1]

> One example of a group of contaminants for which monitoring might be judged to be infeasible would be viruses, which are currently prohibitively expensive to isolate and measure on a routine basis. Therefore, the Committee expects that the Administrator would prescribe all known treatment techniques for controlling viruses rather than establishing a maximum contaminant level for viruses. A second example might be as follows: where several specific contaminants occur within a general group, the cumulative expense of monitoring for each individual contaminant might similarly lead to a judgment that such contaminants are ones for which treatment technique regulations should be prescribed.

Certainly, these considerations are still relevant and applicable to our existing drinking water contamination problems. To eliminate the treatment technique authority in reaction to EPA's now withdrawn proposal to require water utilities to treat organically-contaminated water at least as effectively as with activated carbon filtration is an unjustifiably extreme measure. In our view, this amendment would greatly hamper EPA's ability to address drinking water contamination problems in the most efficacious manner possible. At a time when the extent of toxic chemical contamination of our drinking water supplies is being revealed to be far greater than we once thought, it would not serve the public interest to reduce the tools available to EPA to mitigate or remedy the problem.

---

[1] H.R. Rep. No. 93-1185, 93rd Cong., 2d Sess. 12 (1974).

3. Delegation to the States of the Determination of "Generally Available" Technologies for the Purpose of Issuing Variances and Exemptions

The problem of how to regulate small systems has been a persistent one under the SDWA. Much of the Agency's reluctance to issue new maximum contaminant levels has stemmed from a desire to avoid burdening small systems that cannot afford to meet uniform standards. Since such systems serve only a small fraction of the population, the result has been that standards are not being set for large systems that can afford to meet them and that serve the vast majority of the public. The "tail is wagging the dog."

While some flexibility in the setting of standards may therefore be appropriate, NRDC strongly opposes proposals that would simply exempt systems under a certain size from the requirements of the SDWA. Section 3(f) of S. 1866 is such a proposal. It would delegate to the states the responsibility to determine generally available treatment methods, thereby allowing cost considerations to predominate in variance decisions. Where costs to small systems are used to delete from the "generally available" category technologies affordable by larger systems, the majority of the population (who are served primarily by larger systems) do not receive the degree of protection against drinking water contaminants to which they are entitled.

As written, the SDWA directs the Administrator to determine whether a technology is generally available, taking costs into consideration, using a large water system as a reference point. In giving this authority to EPA, Congress sought to establish uniform standards which the states enforcing the drinking water program would use in making decisions on applications for variances and exemptions. If this initial determination were made by the separate states, the SDWA's goal of achieving uniformly high-quality drinking water throughout the country would be irrevocably frustrated.

Since variances and exemptions effectively exempt a public water system from compliance with a particular drinking water standard, persons served by an exempted system are left entirely unprotected from the contaminant in question. The major weakness of this approach is that persons served by small systems are no less vulnerable to dangerous contaminants than persons served by large systems. Small systems are capable in most cases of undertaking at least some protective measures to deal with contamination problems and this fact should be taken into account in formulating an approach to small systems.

NRDC would not oppose an approach under which a determination whether a treatment technology is "generally available" for the purposes of §1412 (b)(3) of the SDWA (42 U.S.C. §300 g-1 (b)(3)) were made on a system-by-system basis if the determination were based on the cost of implementing the technology calculated per capita or per unit of system water output. If the cost exceeded a maximum per unit cost established by EPA, then the technology in question would not be "generally available" for that system.

According to this approach, EPA would establish a maximum per capita or per unit cost and a list of available treatment technologies ranked in order of effectiveness. A system would be required to implement the most effective treatment technology that could be installed for less than the established maximum per capita or per unit cost.

Such a "maximum unit cost" approach would have to be coupled with effective public notification requirements so that the affected community would be made aware that the treatment of its drinking water was not meeting standards applicable to most systems. The community could then decide whether to finance a more effective technology than was required.

We recognize that monitoring requirements can impose a considerable burden on small systems. GAO's recent report[1] on state and local compliance with the SDWA indicated that many systems were failing to monitor adequately even for the few contaminants currently subject to Interim Primary Drinking Water Regulations. The problem was particularly severe for small systems. NRDC would favor shifting responsibility for conducting monitoring from local water systems to state or regional authorities in appropriate cases. Even if local water systems continued to be required to bear the cost of monitoring, considerable economies of scale could be achieved as well as increased reliability and accuracy in monitoring. Adequate monitoring is the cornerstone of safe drinking water protection. No effective action can be taken to safeguard health while existing and possibly substantial public health problems remain invisible.

---

[1] GAO, "States' Compliance Lacking in Meeting Safe Drinking Water Regulations" March 3, 1982

4. Elimination of the Administrator's Authority to Amend Interim Regulations

Section 1412 (a) of the SDWA provides for the promulgation of national primary drinking water regulations establishing maximum contaminant levels for specific contaminants or prescribing treatment techniques. The regulations were to be issued in two stages, as "interim" and later as "revised" primary drinking water regulations. Pending adoption of the more comprehensive revised regulations, which were to be based upon the results of a National Academy of Sciences study, the Agency was directed to adopt national *interim* primary drinking water regulations. The interim regulations were to govern drinking water quality and remain in effect until specifically superseded by revised regulations. To keep the interim regulations current, the SDWA provides that they "may be amended from time to time."

In large measure because of confusion over whether the study by the National Academy of Sciences was properly done, the Agency has never issued revised regulations. Yet, S. 1866 would delete the EPA Administrator's authority to amend the interim regulations. The effect of this amendment would be to freeze the short list of national drinking water standards in its presently inadequate form. Even if EPA received new data indicating that changes, corrections, or additions to the interim regulations were urgently needed, the Agency would be precluded from making any amendments to the current list. The net effect of this change would be to deprive EPA of the flexibility it now has to deal effectively with new problems of drinking water contamination or with existing problems that have not yet been adequately addressed. In NRDC's view, such a change in the law would prevent EPA from responding effectively to drinking water contamination problems. Given the increasing body of evidence on how contaminated our drinking water supplies are, it is difficult to understand how such a change could be justified.

5. Elimination of the Administrator's Authority to Prescribe Operation and Maintenance Requirements

Section 3(a)(2) of S. 1866 further limits the type of regulations the Administrator may issue by deleting §1401(1)(D) of the SDWA, which requires that primary national drinking water regulations include:

> criteria and procedures...to insure proper operation and maintenance of the system, and requirements as to (i) the minimum quality of water that may be taken into the system and (ii) siting for new facilities for public water systems.

NRDC believes that this deletion would take the SDWA a long step backward in protecting public health. When the SDWA was originally considered, studies of public water supply systems presented to Congress showed that there were great variations across the country in the quality of drinking water and water treatment practices. As set forth in the House Report on the SDWA,[1] 56% of the 969 systems studied evidenced physical deficiencies in protection of groundwater sources, and disinfection capacity; 77% of the plant operators were inadequately trained and most systems were unprotected against contamination from sewage cross-connections; 79% of the systems were not inspected annually by the state or county authorities; and 69% did not even analyze for half of the contaminants listed in the U.S. Public Health Service's Drinking Water Standards. In addition, surveillance of drinking water quality was so poor that 90% of the systems covered in EPA's Community Water Supply Study "had no idea what the chemical quality of their drinking water was."[2]

The House Report also noted other widespread problems increasing the potential health risk from drinking water, such as:[3]

> lack of adequate training and certification procedures for water supply operators, lack of adequate, inexpensive monitoring and or measurement methods, the proliferation of small water systems which cannot support well-trained full time operators and necessary equipment, inadequate health effects research, and the increasing demand for drinking water at a time of increasing pressure to dispose of contaminants in ways that may endanger the quality of drinking water.

---

[1] H.R. Rep. No. 93-1185, 93rd Cong., Sess. 5-6 (1974).

[2] Id. at 7.

[3] Id.

On the basis of such evidence that neither the States nor local water authorities were uniformly providing safe drinking water, Congress enacted the SDWA. The GAO's recent report on State enforcement of compliance with the minimal standards thus far established under the Act indicate that many of these problems still persist. Deleting the Administrator's authority to issue regulations concerning water system operation and maintenance, intake water quality, and siting would seriously undermine the EPA's flexibility and effectiveness under the Act. Instead of deleting this authority, NRDC urges the Committee to direct EPA to implement these requirements.

6. Establishment of a Three Year Period During Which a State Can Retain Primary Enforcement Responsibility Without Complying With Revised or Amended Regulations

According to §§1412 (a)(3) and (b)(5) of the SDWA, national primary drinking water standards take effect 18 months after they are initially promulgated. Section 5 of S. 1866 would add a provision permitting states to maintain a drinking water regulatory program in noncompliance with a revised or amended federal standard for an additional 18 months without sacrificing "primary enforcement responsibility" under the Act. On a showing of "good cause" the Administrator could give a state a further six months to comply, for a total period from initial promulgation to compliance date of

42 months or three and a half years. Section 6 applies similar criteria to continued state eligibility for federal grants under the SDWA.

In NRDC's view, 18 months is clearly sufficient time for a state to bring its drinking water program into conformity with a revised or amended drinking water standard. This is the time period the EPA currently allows and to our knowledge no state has ever failed to meet the deadline. Extending the period to three or three and a half years would reduce the incentive for states to act and delay enforcement of controls on dangerous contaminants in drinking water. It would also create the anomaly that water suppliers in primacy states would have up to three and a half years to comply while those in non-primacy states would have 18 months.

The SDWA at present contains no language explicity specifying to what extent or for how long a state can maintain a drinking water regulatory program in non-compliance with changed federal standards without losing its primary enforcement responsibility. A constructive amendment to the SDWA would remove this ambiguity by providing that states cannot retain primary enforcement responsibility without bringing their regulatory programs into conformity with federal drinking water standards as they become effective.

7. Changing of the Composition of the National Drinking Water Advisory Council

The SDWA provides in §1446 for the creation of a

National Drinking Water Advisory Council to "advise, consult with, and make recommendations to the Administrator on matters relating to activities, functions, and policies of the Agency under [the SDWA]." Section 7 of S. 1866 would change the composition of the Council by eliminating one membership category and adding two new ones. The category that would be eliminated consists of "representatives of private organizations or groups demonstrating an active interest in the field of water hygiene and public water supply." The first new category would consist of "representatives of suppliers of water, including both publicly owned and private investor-owned suppliers of water." The second new category would consist of "persons in the scientific community expert in the field of public health and water hygiene." Finally, a category consisting of members of the "general public" would be reduced from 5 to 4 members while total membership on the Council would be increased from 15 to 16 members.

NRDC has no objection to the inclusion of water supply officials and scientists on the Council. Such voices are clearly necessary to the Council's function and purpose and have always been well-represented there. In fact, they may presently be over-represented there. NRDC does object to what appears to be an apparent attempt in S. 1866 to "stack the deck" against representatives of public interest organizations and the general public. Under the SDWA, as presently written, fully two-thirds of the Council are supposed to be either members of the general public or representatives of organizations demonstrating an "active interest" in water supply matters (the remaining third consists of State and local officials). Within this two-thirds, members can be drawn from the scientific community, from among water supply officials, from public interest groups, and from the general public. Under §7 of S. 1866, representatives of environmental organizations and all other members of the public who are not scientists, State or local officials, or company representatives are relegated to one quarter of the Council's membership. NRDC strongly opposes this attempt to amplify the voice of the water utility industry on the Council at the expense of environmental representatives and the general public.

8. Alteration of Administrative and Judicial Review Procedures

If enacted, S. 1866 would render effective regulation of contamination in drinking water a more difficult, expensive, and time-consuming process. It is ironic that a bill concerned with "regulatory reform" would seek to add to the cost of effective government and increase bureaucratic complexity.

Section 2 would require the Administrator to accompany any regulations issued under the SDWA with a statement including

> ...a determination that the costs of compliance with the rule are justified by the benefits resulting from the application of such rule together with a detailed analysis setting forth (i) the factual data on which such determination is made, and (ii) the reasons for such a determination....

Demands for cost-benefit analysis have become a favored response by those opposed to proposed environmental regulation since easily quantifiable economic costs of regulation are likely to outweigh more inchoate environmental and health benefits. Where the matter at issue is an ambient contaminant rather than a product or process which offers some tangible benefits, the difficulties of quantifying the benefits are great. For this reason, Congress has traditionally established an "ample margin of safety" rather than an "unreasonable risk" (i.e.,cost-benefit) standard for toxic ambient contaminants. See, e.g. §307 of the Clean Water Act and §112 of the Clean Air Act.

The conceptual, ethical, and methodological difficulties associated with attempts to quantify intangible benefits such as health and life have been discussed at length by by National Academy of Sciences,[1] the General Accounting Office,[2] the MIT Center for Policy Alternatives,[1] and the current head of EPA's Office of Drinking Water,[2] among others. The problem was well articulated by the author of the Safe Drinking Water Act, former Congressman Paul Rogers, as follows:[3]

---

[1] National Academy of Sciences, Principles for Evaluation Chemicals in the Environment (1975).

[2] GAO, Report to Congress: An Executive Summary - 16 Air and Water Issues Facing the Nation, (1978).

> There is a movement... which says that efforts to improve our citizens' health must be cost-beneficial. That we must show that the price of preventing ill health and disease and death does not cost more than if we had not made the effort. In other words, if getting sick is cheaper, then maybe we should not try to prevent illness. We must not allow such a brand of bogus economics to deter us from our goal of improving the health of our people and the environment which contributes to their health.

The SDWA, as now enacted, requires that the Administrator of EPA consider costs when primary drinking water regulations are developed. The Agency's record in implementing the Act shows that the Administrator has done so in every case. There is no good reason to enforce more rigid cost benefit analysis in regulation under SDWA when the principal effect will be the unnecessary expenditure of EPA's sparse resources on superfluous analyses.

---

[1] MIT Center for Policy Alternatives, Benefits of Environmental Health and Safety Regulations, Report to Senate Committee on Government Affairs (1980).

[2] V. Kimm, *et al.*, Waterborne Carcinogens: A Regulator's View, in R. Crandall, L. Love, *The Scientific Basis of Health and Safety Regulation* (1981), pp. 229-249.

[3] Speech to the National Coalition for Disease Prevention and Environmental Health, November 15, 1978.

S. 1866 would also change judicial review procedures. Under the SDWA, as written, venue for judicial review of certain specifically enumerated matters, including the issuance of national primary drinking water standards, lies with the U.S. Circuit Court of Appeals for the District of Columbia. Venue for other matters lies with the "appropriate circuit." If S. 1866 were enacted, review of "any action" by the Administrator would be either in the D.C. Circuit or in the circuit "in which a substantial portion of the impact or injury associated with the action of the Administrator will occur." S. 1866, §2(a). This provision sets the stage for a wasteful and counter-productive "race to the courthouse" each time a national drinking water regulation is issued. In our view, the provision offers no advantages over the current language of the SDWA, since matters of national impact must be reviewed in the D.C. circuit while all other actions, such as matters of local or regional concern, may be heard where "a substantial portion of the impact or injury... will occur."

9. Public Notification Requirements

The SDWA presently requires community water systems to provide public notice of failures to comply with drinking water regulations concerning contaminant levels and monitoring. EPA regulations specify the media that must be be used for notifications about different types of violations. 40 C.F.R. §141.32.

There is little evidence that the public notice requirements have imposed a significant financial burden on water utilities. In fact, the recent GAO Report on state compliance with the SDWA indicates that the public notification requirements have not been broadly complied with or enforced. In addition, we are aware of no evidence that notifications have caused the public to overreact to minor violations. On the contrary, it appears that public notifications of violations generally elicited little public response. This is not surprising since, under present law, notification can be delayed as much as three months after a violation occurs. A water customer who receives notification of a now-corrected turbidity violation that occured three months ago is unlikely to exhibit much interest even if the significance of the violation were understood.

Despite the fact that there has been scant public reaction to notifications under the SDWA to date, and there is also a record of lax enforcement documented by the GAO, we believe that cutting back on the notification requirements would not serve the public interest. As regulatory agency enforcement budgets are cut at both the federal and state levels, the need for the fullest possible public information on compliance with the law becomes more rather than less urgent. In the case of drinking water, where people are directly ingesting contaminants, and will be asked to pay for capital improvements to reduce or eliminate these contaminants, the justification for the greatest possible public awareness of compliance records is very compelling.

NRDC is therefore strongly opposed to amending the SDWA to limit the public notice obligation of water suppliers to "serious" or "health related" violations. At the present time, the meaning of "health related" is a highly political issue, as anyone following any of the country's toxics-related statutes will affirm. Under these circumstances, we believe it best to allow the public to continue to make its own judgement about whether a particular drinking water violation is "health related." We also believe that when EPA finally establishes standards for organic chemicals, the contaminants of greatest concern to many members of the public, there will be far greater public reaction to notices of violations of standards.

Sole Source Aquifers

Section 1424 of the SDWA prohibits federally-assisted projects from contaminating the recharge zone of any aquifer designated by EPA as the sole or primary source of drinking water for an area. This provision has not been effectively implemented. Implementing regulations proposed in 1977 have yet to be promulgated. To our knowledge only eight aquifers have been designated as "sole sources" of drinking water to date.

In NRDC's view, safe drinking water can be assured for areas reliant upon groundwater sources only by means of an integrated groundwater protection strategy. EPA should therefore be directed to move expeditiously to implement the sole source aquifer protection provision contained in the present Act. NRDC also supports an expansion of state and federal responsibilities to assure the safety of groundwater as proposed in bills recently introduced in the Senate and House, S. 2131 by Senator Moynihan and H.R. 5562 by Representative Carney.

In Conclusion

The SDWA was Congress' response to the failure of the States and local water systems to respond effectively to the problem of industrial organics and other contaminants in drinking water supplies. It was an effort to initiate meaningful steps at all levels of government to begin remedying the national problem of contaminated drinking water. Although EPA has moved only slowly, traditional water supply authorities in many cases had moved not at all to protect public health, which is why Congress passed the Act in the first place. In the intervening years, local water systems have continued to do very little to address the problem of organic chemicals in drinking water, although their opposition to EPA's somewhat belated efforts has been quite vigorous. For this reason, NRDC believes that the need for a strong federal drinking water law is at least as great as in 1974, if not greater.

The SDWA represents a well-conceived effort to ensure that the basic right to safe drinking water is enjoyed by everyone in the United States, no matter where they live. We therefore urge rejection of amendments to the Act which would defeat its underlying preventive purpose.

Natural Resources Defense Council, Inc.
122 EAST 42ND STREET
NEW YORK, N.Y. 10168
212 949-0049

Washington Office
1725 I STREET, N.W.
SUITE 600
WASHINGTON, D.C. 20006
202 223-8210

Western Office
25 KEARNY STREET
SAN FRANCISCO, CALIF. 94108
415 421-6561

March 19, 1982

Senator Slade Gorton
U.S. Senate
3327 Dirksen Senate Office Bldg.
Washington, D.C. 20510

Dear Senator Gorton:

Enclosed you will find an analysis of S.1866, the bill you introduced to amend the Safe Drinking Water Act (SDWA) of 1974. At the time you introduced the bill you emphasized that you were "not wedded to every change which is proposed." Although we feel that the bill is a useful vehicle for ventilating some important issues concerning the SDWA, we believe that the proposed amendments would undermine the basic objective of the Act, which is to ensure that our drinking water is safe.

In light of accumulating evidence that a strong SDWA is needed, including GAO's recent report on the widespread lack of local compliance with basic drinking water standards and frequent reports of new groundwater contamination problems across the United States, we hope you will reconsider your support for S.1866.

Very truly yours,

Jacqueline M. Warren
Jacqueline M. Warren

David B. Keto
Counsel for NRDC

Natural Resources Defense Council, Inc.

122 EAST 42ND STREET
NEW YORK, N.Y. 10168
212 949-0049

Washington Office
1725 I STREET, N.W.
SUITE 600
WASHINGTON, D.C. 20006
202 223-8210

Western Office
25 KEARNY STREET
SAN FRANCISCO, CALIF. 94108
415 421-6561

BOARD OF TRUSTEES
Adrian W. DeWind
Chairman
Stephen Duggan
Chairman Emeritus
James Marshall
Vice Chairman
Michael McIntosh
Vice Chairman
Dr. George M. Woodwell
Vice Chairman
Dr. Dean E. Abrahamson
Mrs. Louis Auchincloss
Boris I. Bittker
Robert O. Blake
William T. Coleman, Jr.
Frederick A. Collins, Jr.
Robert W. Craig
Joan K. Davidson
Dr. René J. Dubos
James B. Frankel
Robert W. Gilmore
Francis W. Hatch, Jr.
Thomas C. Jorling
Hamilton Kean
Jonathan Z. Larsen
Dr. Joshua Lederberg
Carol R. Noyes
John B. Oakes
Owen Olpin
Franklin E. Parker
Dr. Gifford B. Pinchot
Robert Redford
John R. Robinson
Laurance Rockefeller
Joan C. Schwartz
John Sheehan
David Sive
Gus Speth
Thomas B. Stoel
Thomas A. Troyer
Beatrice Abbott Duggan
U.N. Representative
John H. Adams
Executive Director

Analysis of Senate Bill 1866
to Amend The
Safe Drinking Water Act of 1974

Jacqueline M. Warren
&
David B. Keto
Counsel for NRDC

March 1982

The Safe Drinking Water Act

Congress passed the Safe Drinking Water Act (SDWA) in 1974, in response to widespread national concern over the extensive presence of organic chemicals, many of which are carcinogenic, in drinking water supplies throughout the United States. Studies conducted in the early 1970s by the Environmental Protection Agency (EPA) and other organizations appeared to indicate a correlation between high concentrations of industrial organics in drinking water and cancer "hotspots" revealed in epidemiological studies concerning the distribution of cancer rates in various regions of the country.[1]

Evidence has continued to mount of contamination of drinking water supplies with dangerous organic and inorganic chemicals.[2] To date, more than 700 organic chemicals, including vinyl chloride, carbon tetrachloride, dieldrin, trichloroethylene, chloroform, kepone, PCBs and benzene, have been detected in our nation's drinking water supplies. Although the National Academy of Sciences has identified as carcinogens 22 of the chemicals found in drinking water,[3] and many others are known to be mutagenic or otherwise toxic, the vast majority have not yet been tested to determine their toxicity. Moreover, it is estimated that the 700 chemicals represent only a small fraction, perhaps as little as 10% of the organic chemicals present in drinking water.

In light of the potential human hazards posed by exposure to such a broad array of dangerous chemicals in drinking water, Congress in the SDWA adopted a preventive approach which requires that uncertainties be resolved on the side of protecting public health. NRDC is hopeful that the overriding precautionary intent of Congress, which was stated repeatedly in the Committee Report and the debates, will remain uppermost in the minds of the members as S.1866 is considered and debated. We believe that the preventive approach of the SDWA is a valid one and should be preserved. As a matter of policy, it resolves uncertainties in favor of protecting public health rather than placing the public at continuing risk. The alternative, waiting until the link between disease and consumption of chemically-contaminated drinking water is proved conclusively, is contrary to accepted preventive health philosophy and would impose a social cost in terms of human pain and suffering which would be unconscionable.

---

[1] See Highland, et al., Malignant Neglect 82-91 (1979).

[2] Contamination of Groundwater by Toxic Organic Chemicals, Council on Environmental Quality, 1981.

[3] Drinking Water and Health, National Academy of Science, 1977, p.49.

Position of the Water Supply Industry

The SDWA was enacted over the opposition of water suppliers (mainly private, investor-owned utilities) who opposed passage of the Act as an intrusion on their traditional jurisdiction. The Act was signed into law by a Republican president, Gerald Ford, due to the strength of public concern over the evidence that organic chemicals in water appeared to be raising cancer rates in numerous municipalities. The weight of this evidence has in no way diminished since that time. On the contrary, warnings have been issued by the World Health Organization,[1] the National Cancer Institute,[2] the National Institute of Environmental Health Sciences,[3] the Food and Drug Administration,[4] the National Academy of Sciences,[5] the Council on Environmental Quality,[6] and others that exposure to carcinogenic chemicals in drinking water poses a risk of increased cancer incidence in humans. As Dr. Arthur C. Upton, former Director of the National Cancer Institute, testified at EPA hearings:[7]

> Additive or more than additive effects from multiple exposures to an array of organic carcinogens in water are of such significance as to warrant an appraisal of the opportunity for magnification of the total carcinogenic burden which may be tractable or controllable by water processing to reduce the levels of total exposure....In the interest of cancer prevention, it seems prudent to control exposures to carcinogenic contaminants in drinking water.

Despite the weight of evidence which has continued to mount since passage of the Act, the water supply industry has fought a persistent rear-guard action against the SDWA since its enactment.

---

[1] "Prevention of Cancer", Report of WHO Expert Committee, WHO Technical Report Series No. 276, Geneva, 1964.

[2] Human Health Considerations of Carcinogenic Contaminants in Drinking Water, Arthur C. Upton, Director, National Cancer Institute, April 1978.

[3] Statements of Dr. David C. Hoel and Dr. Richard Bates, National Institute of Environmental Health Sciences, EPA Hearings, July 11, 1978.

[4] Statement of Donald Kennedy, Commissioner, Food & Drug Administration, EPA Hearings, July 11, 1978.

[5] Drinking Water and Health, National Academy of Sciences, 1977.

[6] Drinking Water and Cancer, Kenny S. Crump & Harry A. Guess, Council on Environmental Quality, December 1980.

[7] Statement of Dr. Arthur C. Upton, EPA Hearings on Control of Organic Contaminants in Drinking Water, Washington, D.C., July 12, 1978.

They have strongly opposed the promulgation of effective regulations under the SDWA. Even now, seven years after Congress directed EPA to move expeditiously to establish uniform national standards for drinking water in order to provide maximum feasible protection of public health, EPA has promulgated only a very few Maximum Contaminant Levels for organic chemicals and other contaminants of drinking water.

Nevertheless, the water supply industry has sought the repeal of key provisions of the SDWA in order to forestall future meaningful regulation. Thus, although S.1866 is styled the "Safe Drinking Water Regulatory Reform Act" in keeping with current political trends, the bill is, in fact, little more than a rehash of a bill introduced by Representative Gramm during the 96th Congress, H.R.6090. Most of the provisions of that bill were rejected in committee and never reached the House floor. Rep. Gramm has reintroduced the bill in this session, however, as H.R.4509.

The water suppliers' basic argument in backing this latest attempt to amend the SDWA is that the Act, as it stands, lets EPA go beyond what Congress intended. We strongly disagree. The legislative history of the SDWA clearly shows that a preventive approach to regulating potentially carcinogenic exposures to organic chemicals in drinking water is precisely what Congress intended. Because of ethical and humanitarian constraints on testing with human subjects, we may never have the kind of evidence the industry is insisting upon as a prerequisite to regulation for most of the organic chemicals in drinking water -- even those we know today to cause cancer in animals.

In introducing S.1866, Senator Gorton candidly stated: ✱

> I want to stress at the outset...that I am not wedded to every change which is proposed. I regard this bill as a vehicle that raises some key issues. If this bill receives close scrutiny and generates thoughtful discussion from which we can divine improvements to the procedures called for in the SDWA, the bill will have served its purpose.

Cong. Rec. S.13654 (daily ed. November 18, 1981)). Whatever its value as a catalyst for discussion, in our view S.1866 is, at best, ill-conceived to bring about meaningful improvements in the SDWA.

NRDC's Specific Comments on S.1866

The Senate bill seeks to weaken the SDWA in several ways. First, it would change the standard for promulgating drinking water regulations from a preventive standard to a "reasonable risk" standard. Second, it would withdraw the Administrator's ability to mandate use of a particular treatment technology. Third, it would eliminate the Administrator's authority to regulate the operation and maintenance of water facilities. Fourth, it would eliminate the Administrator's authority to amend interim regulations. Fifth, it would alter procedures for the issuance of regulations and for judicial review. Sixth, it would establish a three year period during which a state could retain "primary enforcement responsibility" under the Act and remain eligible for federal grants without enforcing revised drinking water regulations. Finally, it would change the composition of the National Drinking Water Advisory Council to one more dominated by the water supply industry.

1. Alteration of Standards Applicable to Promulgation of Drinking Water Regulations

The SDWA presently requires the Administrator to issue regulations for "each contaminant which in [the Administrator's] judgment... may have any adverse effect on the health of persons." 42 U.S.C. §300-1(b)(1)(B). This language embodies the preventive philosophy and intent of the SDWA, as the House Report explained:[1]

> The words used by the Committee were carefully chosen. Because of the essentially preventive purpose of the legislation, the vast number of contaminants which may need to be regulated, and the limited amount of knowledge presently available on the health effects of various contaminants in drinking water, the Committee did not intend to require conclusive proof that any contaminant will cause adverse health effects as a condition for regulation. Rather, all that is required is that the Administrator make a reasoned and plausible judgment that a contaminant *may* have such an effect.

Section 3 of S.1866 would change this basic requirement from one applying to contaminants which "may have any adverse effect on the health of persons" to one applying to contaminants which "pose an unreasonable risk to the health of persons." Not only does this change to the present tense effectively repeal the precautionary nature of the Act, but the substitution of the "unreasonable risk" standard would require that the public be subject to serious documented hazards before the EPA could act to reduce the danger. Since under §3 an unreasonable risk must arise before mitigating action could be initiated, the public could not be protected until the level of exposure and the likelihood of harm became "unreasonable". The social cost of permitting the exposure to continue could be a human health disaster twenty years hence due to cancer's long latency period. Weighed against this is the dollar cost of compliance with a primary drinking water regulation, which *under* current law must be feasible in terms of both technology and cost before it may validly be promulgated. See 42 U.S.C. §300g-1(a)(2).

---

[1] H.R.Rep. No. 93-1185, 92nd Cong., 2d Sess. 10 (1974).

Altering the standard for issuing regulations to an "unreasonable risk" standard would also create an anomaly in the statute. Variances and exemptions cannot be granted under the SDWA as now written if doing so would create an "unreasonable risk to health." See 42 U.S.C. §§300g-4(a)(1)(A), 300g-5(a)(3). Yet if S.1866 were enacted, drinking water regulations themselves would be based on an unreasonable risk standard. Presumably, the variance and exemption provisions would become inoperative, unless they were amended so that an even lower minimum standard would be applicable to them.

2. Elimination of the Administrator's Authority to Prescribe Particular Treatment Techniques

S.1866 would eliminate the Admnistrator's authority to require use of a particular treatment technology in cases where setting a maximum permissible contaminant level was prohibitively expensive or technologically impossible. The House Commerce Committee's report on the original SDWA legislation identified two examples where monitoring might be judged "infeasible":[1]

> One example of a group of contaminants for which monitoring might be judged to be infeasible would be viruses, which are currently prohibitively expensive to isolate and measure on a routine basis. Therefore, the Committee expects that the Administrator would prescribe all known treatment techniques for controlling viruses rather than establishing a maximum contaminant level for viruses. A second example might be as follows: where several specific contaminants occur within a general group, the cumulative expense of monitoring for each individual contaminant might similarly lead to a judgment that such contaminants are ones for which treatment technique regulations should be prescribed.

Certainly, these considerations are still relevant and applicable to our existing drinking water contamination problems. To eliminate the treatment technique authority in reaction to EPA's now withdrawn proposal to require water utilities to treat organically-contaminated water at least as effectively as with activated carbon filtration is a destructively extreme measure.

---

[1] H.R. Rep. No. 93-1185, 93rd Cong., 2d Sess. 12 (1974).

3. Elimination of the Administrator's Authority to Prescribe Operation and Maintenance Requirements

Section 3(a)(2) of the bill further limits the type of regulations the Administrator may issue by deleting a provision of the SDWA requiring that primary national drinking water regulations include:

> criteria and procedures...to insure proper operation and maintenance of the system, and requirements as to (i) the minimum quality of water that may be taken into the system and (ii) siting for new facilities for public water systems.

42 U.S.C. §300(f)(1)(D).

In the view of NRDC, this deletion would take the SDWA a long step backward in protecting public health. When the SDWA was originally considered, studies of public water supply systems presented at hearings showed that there were great variations across the country in the quality of drinking water and water treatment practices. As set forth in the House Report on the SDWA,[1] 56% of the 969 systems studied evidenced physical deficiencies in protection of groundwater sources, and disinfection capacity; 77% of the plant operators were inadequately trained and most systems were unprotected against contamination from sewage cross-connections; 79% of the systems were not inspected annually by the state or county authorities; and 69% did not even analyze for half of the contaminants listed in the U.S. Public Health Service's Drinking Water Standards. In addition, surveillance of drinking water quality was so poor that 90% of the systems covered in EPA's Community Water Supply Study "had no idea what the chemical quality of their drinking water was."[2]

The House Report also noted other widespread problems increasing the potential health risk from drinking water, such as:[3]

> lack of adequate training and certification procedures for water supply operators, lack of adequate, inexpensive monitoring or measurement methods, the proliferation of small water systems which cannot support well-trained full time operators and necessary equipment, inadequate health effects research, and the increasing demand for drinking water at a time of increasing pressure to dispose of contaminants in ways that may endanger the quality of drinking water.

---

[1] H.R. Rep. No. 93-1185, 93rd Cong., 2d Sess. 5-6 (1974).

[2] _Id._ at 7.

[3] _Id._

On the basis of such evidence that neither the States nor local water authorities were uniformly providing safe drinking water, Congress enacted the SDWA. The GAO has recently reported that State enforcement of compliance with the minimal standards thus far established under the Act remains problematic.[1] Deleting the Administrator's authority to issue regulations concerning water system operation and maintenance, intake water quality, and siting would seriously undermine the EPA's flexibility and effectiveness under the Act.

4. Elimination of the Administrator's Authority to Amend Interim Regulations

The SDWA provides for the promulgation of national primary drinking water regulations establishing maximum contaminant levels for specific contaminants or prescribing treatment techniques. 42 U.S.C. §300g-1(b)(3). The regulations were to be issued in two stages as "interim" and later "revised" primary drinking water regulations. Pending adoption of the more comprehensive revised regulations, which were to be based upon the results of a National Academy of Sciences study, the Agency was directed to adopt national interim primary drinking water regulations. 42 U.S.C. §300g-1(a). The interim regulations were to govern drinking water quality and remain in effect until specifically superseded by revised regulations. To keep the interim regulations current, the SDWA provides that they "may be amended from time to time." 42 U.S.C. §300g-1(a)(i).

In large measure because of confusion over whether the study by the National Academy of Sciences was properly done, the Agency has never issued revised regulations. The Senate bill would delete the EPA Administrator's authority to amend the interim regulations. S.1866, §8. The effect of this amendment would be to freeze the short list of national drinking water standards in its presently inadequate form. Even if it received new data indicating that changes, corrections, or additions to the interim regulations were urgently needed, EPA would be precluded from making any amendments to the current list. The net effect of §8 of S.1866 would be to deprive EPA of the flexibility it now has to deal effectively with new problems of drinking water contamination or with existing problems that have not yet been adequately addressed. In NRDC's view such a change in the law would prevent EPA from responding effectively to drinking water contamination problems and would not serve the public interest.

5. Alteration of Administrative and Judicial Review Procedures

The supporters of S.1866 are seeking to "change the rules of the game" to render effective regulation a more difficult, expensive, and time-consuming process. It is ironic that a bill concerned with "regulatory reform" would seek to add to the cost of effective government and increase bureaucratic complexity.

---

[1] GAO, State's Compliance Lacking in Meeting Safe Drinking Water Regulations, March 3, 1982.

Section 2 would require the Administrator to accompany any regulations issued under the SDWA with a statement including

> ...a determination that the costs of compliance with the rule are justified by the benefits resulting from the application of such rule together with a detailed analysis setting forth (i) the factual data on which such determination is made, and (ii) the reasons for such a determination.....

S.1866 §2(c). Cost-benefit analysis has become a favored industry response to proposed environmental regulation reflecting to some extent the fact that easily quantifiable economic costs of regulation are likely to outweigh more inchoate environmental and health benefits.

The conceptual, ethical, and methodological difficulties associated with attempts to quantify intangible benefits such as health and life have been discussed at length by the National Academy of Sciences,[1] the General Accounting Office,[2] the MIT Center for Policy Alternatives,[3] and the current head of EPA's Office of Drinking Water,[4] among others. The problem was well articulated by former Health Subcommittee Chairman Paul Rogers when he stated:[5]

---

[1] National Academy of Sciences, Principles for Evaluation Chemicals in the Environment (1975).

[2] GAO, Report to the Congress: An Executive Summary - 16 Air and Water Issues Facing the Nation, (1978).

[3] MIT Center for Policy Alternatives, Benefits of Environmental Health and Safety Regulations, Report to the Senate Committee on Government Affairs (1980).

[4] V. Kimm, *et al.*, Waterborne Carcinogens: A Regulator's View, in R. Crandall, L. Love, *The Scientific Basis of Health and Safety Regulation* (1981), pp. 229-249.

[5] Speech to the National Coalition for Disease Prevention and Environmental Health, November 15, 1978.

> There is a movement... which says that efforts to improve our citizens' health must be cost-beneficial. That we must show that the price of preventing ill health and disease and death does not cost more than if we had not made the effort. In other words, if getting sick is cheaper, then maybe we should not try to prevent illness. We must not allow such a brand of bogus economics to deter us from our goal of improving the health of our people and the environment which contributes to their health.

The SDWA as now written, requires that the Administrator of EPA consider costs when primary drinking water regulations are developed. The Agency's record in implementing the Act shows that the Administrator has done so in every case. There is no good reason to enforce more rigid cost-benefit analysis in regulation under the SDWA when the principal effect will be the unnecessary expenditure of EPA's sparse resources on superfluous analyses.

The Senate bill would also change judicial review procedures. Under the SDWA, as enacted, venue for judicial review of certain specifically enumerated matters, including the issuance of national primary drinking water standards, lies with the Court of Appeals for the District of Columbia. Venue for other matters lies with the "appropriate circuit." 42 U.S.C. §300j-7. If S.1866 were enacted, review of "any action" by the Administrator would be either in the D.C. Circuit or in the circuit "in which a substantial portion of the impact or injury associated with the action of the Administrator will occur." S.1866, §2(a). This provision sets the stage for a wasteful and counter-productive "race to the courthouse" each time a regulation is issued. In our view, the provision offers no advantages over the current language of the SDWA.

6. Establishment of a Three Year Period During Which a State Can Retain "Primary Enforcement Responsibility" Without Complying With Revised Regulations

Under the SDWA, national primary drinking standards take effect 18 months after they are initially promulgated. 42 U.S.C. §§300g-1 (a)(3) and (b)(5). Section 5 of S.1866 would add a provision permitting states to maintain a drinking water regulatory program in noncompliance with a revised federal standard for an additional 18 months without sacrificing "primary enforcement responsibility" under the Act. On a showing of "good cause" the Administrator could give a state a further six months to comply, for a total period from initial promulgation to compliance date of 42 months or three and a half years. Section 6 applies similar criteria to continued State eligibility for federal grants under the SDWA.

In NRDC's view, 18 months is clearly sufficient time for a state to bring its drinking water program into conformity with a revised drinking water standard. This is the time period the EPA currently allows and to our knowledge no state has ever failed to meet the deadline. Extending the period to three or three and a half years would reduce the incentive for states to act and delay enforcement of controls on dangerous contaminants in drinking water. It would also create the anomaly that water suppliers in primacy states would have up to three and a half years to comply while those in non-primacy states would have 18 months.

The SDWA at present contains no language explicitly specifying to what extent or for how long a state can maintain a drinking water regulatory program in non-compliance with revised federal standards without losing its primary enforcement responsibility. A constructive amendment to the SDWA would remove this ambiguity by providing that states cannot retain primary enforcement responsibility without bringing their regulatory programs into conformity with federal drinking water standards as they become effective.

7. Changing of the Composition of the National Drinking Water Advisory Council

The SDWA provides for the creation of a National Drinking Water Advisory Council to "advise, consult with, and make recommendations the the Administrator on matters relating to activities, functions and policies of the Agency under [the SDWA]." 42 U.S.C. 300j-5(b). Section 7 of S.1866 changes the composition of the Council by eliminating one membership category and adding two new ones. The category that would be eliminated consists of "representatives of private organizations or groups demonstrating an active interest in the field of water hygiene and public water supply." The first new category would consist of "representatives of suppliers of water, including both publicly owned and private investor-owned suppliers of water." The second new category would consist of "persons in the scientific community expert in the field of public health and water hygiene." Finally, a category consisting of members of the "general public" would be reduced from 5 to 4 members while total membership on the Council would be increased from 15 to 16 members.

NRDC has no objection to the inclusion of water supply officials and scientists on the Council. Such voices are clearly necessary to the Council's function and purpose and have always been well-represented there. NRDC does object to what appears to be an obvious attempt in S.1866 to "stack the deck" against representatives of public interest organizations and the general public. Under the SDWA, as presently written, fully two-thirds of the Council are either members of the general public or representatives of organizations demonstrating an "active interest" in water supply matters (the remaining third consists of State and local officials). Within this two-thirds, members can be drawn from the scientific community, from among water supply officials, from public interest groups, and from the general public. Under §7 of S.1866, representatives of environmental organizations and all other members of the public who are not scientists, State or local officials, or company representatives are relegated to one quarter of the Council's membership. NRDC opposes this attempt to amplify the voice of industry on the Council at the expense of environmental representatives and the general public.

In Conclusion

The SDWA was Congress' response to the failure of the States and local water systems to respond effectively to the problem of industrial organics and other contaminants in drinking water supplies. It was an effort to initiate meaningful steps at all levels of government to begin remedying the national problem of contaminated drinking water. Although EPA has moved only slowly, traditional water supply authorities in many cases had moved not at all to protect public health, which is why Congress passed the Act in the first place. In the intervening years, local water systems have continued to do very little to address the problem of organic chemicals in drinking water, although their opposition to EPA's somewhat belated efforts has been quite vigorous. For this reason, NRDC believes that the need for a strong federal drinking water law is at least as great as in 1974, if not greater.

The SDWA represents a well-conceived effort to ensure that the basic right to safe drinking water is enjoyed by everyone in the United States, no matter where they live. We therefore urge rejection of amendments to the Act which would defeat its underlying preventive purpose.

STATEMENT
OF
ROBERT HARPSTER, EXECUTIVE DIRECTOR,
LEAGUE OF IOWA MUNICIPALITIES
FOR THE
NATIONAL LEAGUE OF CITIES
MAY 19, 1982

Good morning. My name is Robert Harpster. I am the Executive Director of the League of Iowa Municipalities, and I am testifying with Mayor Janet Gray Hayes of San Jose this morning on behalf of the National League of Cities. My state league represents 900 city members in Iowa out of the 15,000 cities represented directly and indirectly by the National League of Cities. Thus, today, we will be reflecting the views and concerns on Safe Drinking Water of cities as small as Altoona, Iowa, and as large as New York City and Los Angeles.

We appreciate the invitation to apprise the subcommittee of NLC's experiences and concerns with regard to the existing act. Although I am not in a position to recommend specific amendments to the subcommittee today, I would hope to advise you of problems we currently experience, to attempt to assess some of the remedies proposed by the pending amendments, and to suggest some of our ideas which the committee might wish to consider in reauthorizing the act.

Background

Water is the nation's fastest growing beverage--the marketing of bottled water is increasing more than three times as fast as its nearest competitor--wine. Last year, water was a $550 million dollar business in this country. In fact, water will replace oil as the richest resource of this decade. It will, then, pose the greatest risk of crisis for the eighties.

Bottled water currently costs about 1,000 times as much as tap water. Ironically, at a time when others are encountering serious obstacles in financing to build or even maintain existing water-treatment or supply systems, consumers--that is consumers who can afford to--are increasingly willing to pay high premiums for safe drinking water.

These consumer concerns are not ill-founded. According to the General Accounting Office, since the early 1950's, the number of waterborne disease outbreaks has increased gradually. There have been over 100,000 waterborne recorded illnesses from disease or poisons between 1961 and 1978. Many experts regard this number as but the tip of the iceberg.

The deterioration of urban surface water treatment and water supply systems has also contributed to the growing reliance on groundwater--at present a source of 50 percent of the nation's drinking water. The almost unquestioned purity of groundwater has made it increasingly attractive for urban uses as the uncertainties of the wastewater construction grant program and the growing inability to meet surface safe drinking water standards have escalated.

Unlike in surface waters, however, groundwater contaminants are often invisible. The cleansing ability of mineral layers above an aquifer are frequently capable of removing undesirable water characteristics, such as color and turbidity, odor and taste, which render the groundwater to an ostensibly "safe" level. What more dangerously distinguishes groundwater, however, is that once contaminants reach a saturated region, almost no further cleansing action takes place. Thus detection requires sophisticated monitoring--yet, because of its apparent pristine nature, contamination detection is often long delayed--perhaps by decades--a time period during which the contamination lessens only marginally.

For cities, toxic groundwater pollution is assuming the dimensions of a time bomb. We can estimate that as much as 100 million gallons of industrial wastes in the United States enter groundwater annually. These volumes of waste have been generated for decades, and have been dispersed at uncatalogued, abandoned sites estimated at over 100,000; and at known sites of which studies estimate 75 percent leach. What we have, then, is an unknown quantity of groundwater already contaminated by toxic and hazardous materials. Many aquifers are currently in the process of being polluted by human activities occuring some time in the past. Yet, as in the case of Love Canal, what is occurring is a protracted accumulation of human damage--rather than a sudden outbreak of disease. The relative difficulty of monitoring toxic groundwater pollution and the difficulty of identifying safety levels are indicative that many cities today are using groundwater for drinking and domestic use purposes which is toxic--but that these cities will neither learn about, nor even have the capacity to learn about this threat for years to come.

The toxic problem is, of course, not limited to groundwater. As early as 1974, the City of New Orleans was discovering a number of organics in the finished tap water and in the blood stream of residents in the area. A number of these organics were found to be accumulating in the blood of unborn children of mothers drinking New Orleans tap water. The contaminants in the Orleans, Jefferson, and St. Bernard Parishes came from chemicals pumped into the Mississippi upstream from these localities, and, in many cases, upstream from the state of Mississippi.

It has been claimed that the current provisions of the Safe Drinking Water Act are prohibitive to comply with and that current notification requirements are very burdensome. In our view, these criticisms are misplaced. Consumers are clearly willing to pay a premium for the assurance of safe drinking water. Yet the recent GAO report convincingly demonstrates the current monitoring inadequacy as well as the lack of compliance with reporting requirements. Moreover, the GAO concluded that enforcement actions to bring water systems into compliance ranged from "none to minimal, followed no particular pattern," and were untimely.

Our experience also indicates a need for distinguishing between artificially introduced as opposed to natural contaminants. Whereas the human health risk posed by toxic waste is in unknown proportions which we will not be able to establish for years to come, our experience in Iowa with natural contaminants is distinct.

On January 4, 1980, the Iowa Department of Environmental Quality published a list of cities with confirmed maximum contaminant level violations. In addition to those in violation of levels of arsenic, barium, selenium, flouride and nitrate, numerous cities were also cited for combined radium 226 and 228 and several were listed with gross alpha radioactivity.

In all, 130 cities received letters informing them that their drinking water contained substances that could be hazardous to their health, but that the hazard was not immediate and that "no special precautions need be undertaken". The letters went on to say that radium should not be harmful on a short-term basis.

Since that time, some 30 cities have been identified as having natural radium background content in their drinking water exceeding the 5 pci/L level established by the Environmental Protection Agency.

The levels of violation range from 1 pci/L to 20 in Eldon, Iowa, a community of 1,255 in southeast Iowa.

The radium in water supplies in Iowa occur as natural characteristics of aquifers which are used as the primary source of water for a majority of Iowa cities. It occurs through limestone formations and alternatives to deep wells are sometimes limited, many times more costly, and usually impractical.

Because of geographic locations, a city is not always located near a river, so the use of alluvial wells is out of the question. Rural water systems are not always accessible, and the third option, that of ion exchange through water softening, raises the spector of additional health threats because of increased sodium in the water.

Radium found in Iowa water supplies is in tiny amounts (although still in violation). It has been naturally occurring for years. In theory, if one million people drank about ½ gallon of this Iowa ground water per day for 70 years, the federal estimate is that there would be two more cases of bone cancer than would occur if there were no radium in the water.

Despite the seemingly low health risks, these Iowa cities are expected to bring their drinking water within federal standards, a process that will be costly to many communities.

Notification of customers and the public requires publication in newspapers and direct mailing of notices with the water bills. The notice must state the violation, the health hazard, precautions that the public should take and what the city is doing to correct the situation. The notice must be repeated every three months.

It now appears that the cost of complying with these requirements will not be as minimal as first expected. The City of Sioux City is spending $16,000 per year to notify its customers. The cost they will face for the engineering studies and alteration of their treatment facility is not yet known although city officials do not consider estimates of $4 million as unreasonable.

This cost appears to be excessive in light of the fact that empirical evidence is needed to document that a specific, identifiable and significant health hazard exists at the 5 pci/L level of exposure.

It is especially disturbing when these costs are being incurred for a contaminant that does not have the immediate public health threat as does BacT and there are over 400 cities in Iowa that do not even regularly monitor for BacT.

Mayor Hayes, in her testimony, will present to you very different problems which her community has encountered, as well as experiences of other cities around the nation as their perspective has focused our policy on standard setting, notification, and other issues.

Because the Iowa municipalities encompass so many which are small or rural in character, I wanted to give you our thinking on that issue. Small system compliance has been a particularly difficult issue because of the enormous per capita costs for corrective treatment technologies. Consequently, there has been a virtual escape clause through the granting of variances.

In reviewing the alternatives prior to testifying, it was our view that the size of a community should not be related to the availability or unavailability of best technology treatment techniques. The health and safety of citizens should not be sacrificed to community size.

We support, consequently, greater economic and technical advice from EPA for determining what treatment or technology can be most effective for smaller communities. Given the vast numbers of very small community drinking water systems, we feel that EPA is in the best position to play an innovative role in developing cost effective alternatives. It would be redundant to duplicate this role at every other level of government.

Secondly, we believe that each state should develop a plan by which all drinking water systems will comply with the maximum contaminant levels of the Safe Drinking Water Act. Such state implementation plans should specify monitoring responsibilities and reporting requirements for all systems, and must demonstrate what financial method has been developed to respond to treatment or technology needs for small communities. We believe EPA must continue to review and approve the various elements of a state's drinking water plan, as well as periodically audit a state's implementation efforts to insure that federal standards are met.

Thus, we believe that states, working with local officials, should be given the authority to determine the method through which small systems can meet maximum contaminant levels and monitoring requirements. Local elected officials should be permitted to obtain EPA review of any such plan to assure its safety, and adequacy, and affordability. The granting of variances, in our view, merely avoids grappling with clear health risks to our constituents.

I will now defer to Mayor Hayes. At the close of her testimony, I would be pleased to answer any questions you might have--either about our specific situation in Iowa, or any other comments I have made this morning. Thank you.

STATEMENT

OF

JANET GRAY HAYES, MAYOR OF SAN JOSE, CALIFORNIA

FOR THE

NATIONAL LEAGUE OF CITIES

MAY 19, 1982

Good morning, Mr. Chairman. I am Janet Gray Hayes, Mayor of San Jose, and past Chairman of the National League of Cities Steering Committee on Energy and Environment.

As I appear this morning, I listen to my colleague's testimony about municipal drinking water problems in Iowa with mixed feelings. Where they have experienced a feeling of over-regulation, we have experienced the opposite. We have felt an absence of a strong federal role to prevent or at least limit risks, or the fear of risks, to families in my community. For us, the lack of federal standards in monitoring and the lack of common standards for drinking water contamination has been devastating.

In a way, you could say our most recent chapter began on January 20th--an altogether auspicious day--when one of 13 wells serving 16,500 families in South San Jose was closed due to higher-than-acceptable levels of trichloroethane. By March 19, 1982, the media was reporting findings by a California state public-health expert on birth defects of his belief that there might be a cluster of defects in the neighborhood of the closed well. I do not need to inform you of what goes through a Mayor's mind at just the mention of this possibility--the fear, the anguish, and the bitterness. How does one elected to help and protect constituents weed through the overwhelming complexities to try and allay fears, soothe anger, and give compassion to those who may be victims?

It is difficult for my city, or any city, to know what is needed to protect the public. We lack the scientific and fiscal resources to begin to monitor, analyze, and explain the problems raised by toxic and synthetic chemicals being created by industry in our silicone valley. But local elected officials are in the front line. We are expected to have those answers. And my voters, my constituents, firmly believe that industry will only do that which is the minimum we require--not one step more.

Monitoring

Without question, a critical element--perhaps more than any other--in safe drinking water is monitoring. This is a task which has not been done well under current law at any level of government. With 146,000 violations recorded against only 28,000 community systems in 1980, there is a great danger that much risk is simply not being tracked. There is a lack of full time and properly trained operators; there is operator apathy towards federal testing requirements; there is insufficient enforcement, insufficient funding, and personnel to meet existing federal requirements. It is perhaps not surprising then to learn that EPA itself has requested a 16.6 percent reduction in SWDA funds for FY '83.

Present monitoring requirements do not include many of the most dangerous toxics, however. Thus water owners and operators are not directed, or even advised of numerous toxics which could and are contaminating drinking water. There is insufficient federal research to identify such toxics --especially with regard to groundwater. There is insufficient sophisticated technology to monitor such toxics, much less to treat them. These issues are prohibitive for individual cities--or in many cases states, to handle. Without coordinated resources for research and uniform standard setting, cities and states are forced to duplicate research and technology--to re-create any number of wheels. In so doing, we often create different standards. These varying standards disrupt citizen confidence in local public officials, and subject us to pressure from industries seeking the most lenient, least expensive standards. Perhaps most disconcerting is the uncertainty of what we should look for in monitoring--for few water operators can anticipate the hidden pathways through which toxic chemicals will reach urban drinking water supplies.

In our view, making sure of reliable information about drinking water quality is the fulcrum. It is unreasonable that the City of St. Louis Park and State of Minnesota should have been apprehensive about carcinogens in their aquifer as early as 1972, but were not able to react until 1978, after the expenditure of about $2 million for the development of highly sophisticated monitoring equipment. It is unclear how much of a sacrifice was made: it is clear that the incidence of breast cancer in women in St. Louis Park is double the rate of women in the St. Paul-Minneapolis metropolitan area.

We believe that local water suppliers should be responsible for monitoring drinking water where standardized tests are available. For monitoring required for special situations and using more sophistocated technology, we think primacy states should carry out the responsibility. For those situations such as St. Louis Park, there should be a federal responsibility to develop monitoring capacity and equipment. This methodology and equipment should be field-tested prior to turning over monitoring to primacy states.

Before going on to the next issue, I would like to advise the committee that NLC feels that in the design of monitoring procedures, there should be a coordinated and participatory federal role utilizing the experience and capacities of EPA, the U.S. Geological Survey, and federal public health services. It is a shame not to make use of the combined talents of these agencies, especially given the wide variety of chemicals and wastes in our waters. It is very difficult to understand the continued reluctance of the administration to come to grips with a federal groundwater approach.

Standard Setting

As you can guess from our joint testimony, standard setting is a tough issue. In considering our various experiences in Houston at the end of April, our committee adopted a motion taking into consideration the circumstances presented to you this morning.

NLC would support an amendment to distinguish between introduced and naturally occurring drinking water contaminants. Where a contaminant is naturally occuring, monitoring should be required; however, we believe EPA should bear the burden of demonstrating that any proposed remedial treatment would ensure greater health protection. In contrast, for non-naturally occurring contaminants, the current risk standard in the law should be retained.

We continue to support EPA's current practice of considering feasibility, taking costs into consideration, in setting standards. We do not believe that additional statutory restrictions are necessary.

Notification

As you heard from Mr. Harpster, Sioux City, Iowa is spending approximately $16,000 a year to notify its citizens of radium MCL violations, while in San Jose, we have no real assistance from EPA in notifying our citizens of toxic contaminants. Many cities are of the impression that they are forced to make notification on matters which have relatively little health impact, but not on matters of significant impact to community health. It is easy to speculate whether the $16,000 in Sioux City might not be better spent on monitoring technology. The current provisions both create operator apathy and engender city apprehension when specific information on the health impact of remedial actions is unavailable.

We believe the Administrator should be given the authority to differentiate between public notice requirements for minor and intermittent violations versus those required for health-related and persistent violations of all kinds, except that where an operator is failing to monitor on an ongoing basis, there should be public notification mandates. Operators should be under public pressure to monitor, but should be given the flexibility to insure that public funds are used in the most effective manner to protect public health and safety.

Sole Source Aquifer

Previously, I raised a concern about the lack of any comprehensive federal role on ground water. We are pleased to note that your counterparts in the House Subcommittee on Commerce, Transportation and Tourism, on a bipartisan basis, supported an amendment to the Resource Conservation and Recovery Act to create a national ground water commission. Although that amendment failed to include any municipal representation, we applaud the initiative.

Similarly, we applaud Senator Moynihan for introducing the Sole Source Aquifer Protection Act. Ground water may not easily be separated hydrologically from surface water, and, most certainly, ground water for our cities is intimately tied to supply and quality. It is time that we develop a cooperative federal, state, and local government approach to preparing and carrying out plans to protect critical ground water recharge areas. We very much hope the committee will include this proposed legislation as an amendment to the reauthorization.

Our testimony responded to those issues presented by the committee of greatest concern to our members, and included our own issues. We are grateful for your solicitation of our views and hope they are helpful. If you have any questions, we would be pleased to respond.

TESTIMONY

BY

PETER F. COHALAN

SUFFOLK COUNTY EXECUTIVE

GOOD MORNING. IT IS A GREAT HONOR TO BE HERE TODAY AND I DEEPLY APPRECIATE THE OPPORTUNITY TO PROVIDE TESTIMONY ON THIS EXTREMELY IMPORTANT SUBJECT.

THE FUTURE DRINKING WATER SITUATION ON LONG ISLAND MAY WELL BE SUMMED UP BY SAMUEL TAYLOR COLERIDGE'S FAMOUS WORDS;

"WATER, WATER, EVERY WHERE,
NOR ANY DROP TO DRINK."

LONG ISLAND IS SURROUNDED BY THE ATLANTIC OCEAN AND LONG ISLAND SOUND. UNFORTUNATELY, DESALINIZATION OF SALT WATER IS NOT A VIABLE METHOD OF OBTAINING DRINKING WATER AT THIS TIME.

THERE ARE NO GREAT MOUNTAIN RANGES WHERE SNOW MELTS IN THE SPRING TO PROVIDE GREAT SURGING RIVERS OF CRYSTAL CLEAR WATER ON LONG ISLAND. IN FACT, THERE ARE ONLY FOUR BODIES OF WATER ON LONG ISLAND THAT CAN EVEN BE REFERRED TO AS "RIVERS". THEY ARE ALL LOCATED IN MY HOME COUNTY OF SUFFOLK AND THEY ARE THE CARMANS RIVER, THE PECONIC RIVER, THE NISSEQUOGUE RIVER AND THE CONNETQUOT RIVER. I USE THE TERM RIVER LOOSELY BECAUSE THESE BODIES OF WATER, AS WELL AS THE NUMEROUS STREAMS, PONDS, AND LAKES ON LONG ISLAND, ARE NOTHING MORE THAN SURFACE GROUNDWATER. THE ONLY CURRENT SOURCE OF WATER FOR THE THREE MILLION RESIDENTS OF NASSAU AND SUFFOLK COUNTIES IS GROUNDWATER.

IT IS ESTIMATED THAT THERE ARE OVER 60 TRILLION GALLONS OF WATER IN STORAGE BENEATH LONG ISLAND. THIS WATER IS CONTAINED IN THE UPPER GLACIAL MAGOTHY AND THE RELATIVELY UNEXPLOITED LLOYD AQUIFER. IT WOULD SEEM, THEREFORE, THAT NASSAU AND SUFFOLK COUNTIES SHOULD HAVE A WEALTH OF WATER. UNFORTUNATELY, OUR PRECIOUS GROUNDWATER IS EXTREMELY FRAGILE AND ALL TO EASILY DESTROYED BY ITS GREATEST ENEMY, MAN. LIFE'S ULTIMATE INDISPENSIBLE MINERAL, WATER, IS SEVERELY THREATENED ON LONG ISLAND.

I DO NOT WISH TO GO INTO A LENGTHY SCIENTIFIC DISSERTATION ON GROUNDWATER, BUT A FEW BRIEF FACTS MAY HELP TO ILLUSTRATE LONG ISLAND'S GROUNDWATER PLIGHT.

THERE ARE TWO MAJOR FACTORS THAT ALTER THE QUANTITY AND QUALITY OF GROUNDWATER. ONE IS THE RATE OF WITHDRAWAL AND THE OTHER IS POLLUTION.

IN 1978 IT WAS ESTIMATED THAT WITHDRAWALS OF GROUNDWATER FROM THE GEOLOGIC FORMATIONS BENEATH LONG ISLAND APPROACHED 400 MILLION GALLONS PER DAY. BASED UPON THE RELATIVELY SMALL POPULATION INCREASE OVER THE LAST FOUR YEARS, THE WITHDRAWAL RATE REMAINS AT APPROXIMATELY THE 400 MILLION GALLON PER DAY LEVEL. PUMPAGE AND USE CHARACTERISTICS ON LONG ISLAND VARY GREATLY FROM PLACE TO PLACE. GROUNDWATER REMOVAL MAY BE DONE BY A SINGLE FAMILY WITH ITS OWN DOMESTIC WELL ON A SMALL PARCEL OF LAND, OR BY A LARGE WATER DISTRICT WITH DOZENS OF HIGH CAPACITY WELLS LOCATED MILES APART IN SEVERAL COMMUNITIES. FOR EXAMPLE, THE SUFFOLK COUNTY WATER AUTHORITY HAS TWELVE SUPPLY PLANTS WITHDRAWING WATER FROM SOME 400 WELLS THROUGHOUT THE COUNTY.

THE EFFECT OF THIS CONSTANT WITHDRAWAL OF GROUNDWATER, ALONG WITH THE IMPACT OF RECENT PERIODS OF DROUGHT, HAS CAUSED A GENERAL AND CONTINUING DECLINE IN WATER LEVELS. HOWEVER, I BELIEVE WITH PROPER REGIONAL WATER MANAGEMENT, THERE WILL BE SUFFICIENT AVAILABLE GROUNDWATER TO SUPPLY LONG ISLAND FOR MANY YEARS. THEREFORE, QUANTITY OF GROUNDWATER IS NOT THE MOST CRITICAL ISSUE FACING LONG ISLAND, BUT RATHER THE CRITICAL ISSUE IS THE QUALITY OF THE GROUNDWATER WHICH WE DEPEND UPON FOR OUR NEEDS.

PRECIPITATION IS THE SOLE SOURCE OF FRESH WATER ON LONG ISLAND. THIS RAINFALL RECHARGES THE GROUNDWATER BY PERCOLATING THROUGH THE SOIL. ONCE THE RECHARGED WATER ENTERS THE SATURATED ZONE IT MOVES VERY SLOWLY BUT EVENTUALLY TRAVELS LONG DISTANCES. AS A RESULT, HUMAN OR NATURAL CONTAMINATION OF THE

LAND SURFACE OR THE AIR MAY HAVE A PROLONGED AND WIDE-REACHING IMPACT UPON THE GROUNDWATER . IT TAKES ABOUT 100 YEARS FOR WATER FROM THE SURFACE TO REACH THE LOWER PORTION OF THE MAGOTHY IN THE CENTER OF THE ISLAND. TRAVEL TIME FOR THE WATER FROM THE CENTER OF LONG ISLAND TO THE BARRIER BEACHES OFF THE SOUTH SHORE TAKES ABOUT 800 YEARS AND TRAVEL TIME TO THE NORTH SHORE OF LONG ISLAND IS ABOUT 400 YEARS. THEREFORE, MOST SUFFOLK COUNTY RESIDENTS WITH DEEP WELLS OR PUBLIC WATER ARE PRESENTLY DRINKING PURE, UNCONTAMINATED WATER THAT FELL AS RAIN OVER HALF A CENTURY AGO.

ON THE OTHER HAND, WE ALSO HAVE RESIDENTS WHO HAVE CONTAMINATED WELLS AS A RESULT OF FAIRLY RECENT POLLUTION. FOR EXAMPLE, EARLIER THIS YEAR THREE FAMILIES IN WESTHAMPTON BEACH FOUND THEIR DRINKING WELLS TO BE CONTAMINATED. THE SUSPECTED CAUSE OF THIS CONTAMINATION WAS TWO JP-4 JET FUEL SPILLS THAT TOOK PLACE AT THE WESTHAMPTON AIR FORCE BASE IN 1966 AND IN 1974. THE AIR FORCE BASE IS LOCATED ONE MILE NORTH OF THESE AFFECTED HOMES. THESE THREE FAMILIES ARE APPARENTLY SUFFERING THE CONSEQUENCES OF ACCIDENTS THAT OCCURRED EIGHT TO SIXTEEN YEARS AGO. IT HAS TAKEN THAT LONG FOR THE CONTAMINATION TO TRAVEL ONE MILE.

THE FACT THAT ANYTHING WE PUT ON THE GROUND MAY EVENTUALLY FIND ITS WAY INTO OUR WATER SUPPLY IS NOT ONLY DIFFICULT TO GRASP BUT ALSO INCREDIBLY FRIGHTENING. PESTICIDES THAT OUR FARMERS ONCE USED TO SPRAY THEIR POTATOES ARE NOW CONTAMINATING OUR DRINKING WATER; AS IS STORMWATER RUNOFF FROM OUR ROADS AND HIGHWAYS. ALSO, IN HIGH DENSITY NEIGHBORHOODS WE HAVE FOUND THAT ONE FAMILY'S CESSPOOL MAY BE POLLUTING ANOTHER FAMILY'S DRINKING WELL.

IN ADDITION, AIRBORNE POLLUTANTS FROM INDUSTRIES AND FACTORIES MANY MILES FROM LONG ISLAND RETURN TO EARTH IN RAIN AND CONTAMINATE OUR GROUND-

WATER. EVEN OUR GARBAGE CONSPIRES AGAINST US; LOCAL LANDFILLS ARE NOW CONSIDERED A MAJOR SOURCE OF GROUNDWATER CONTAMINATION.

GENTLEMEN, THE ENORMITY OF THE PROBLEM WE FACE IS ALMOST BEYOND COMPREHENSION. THE BACKYARD MECHANIC WHO CHANGES HIS OWN OIL AND THEN DUMPS IT BEHIND THE ROSE BUSHES IS POLLUTING OUR DRINKING WATER. THE FASTIDIOUS HOUSEWIFE WHO MOPS AND WAXES HER FLOOR WITH MIRACLE CHEMICALS IS POISONING OUR GROUNDWATER WHEN SHE DUMPS HER PAIL OF WASTE WATER OUT THE BACK DOOR. IN THE WORDS OF WALT KELLY'S POGO; "WE HAVE MET THE ENEMY AND HE IS US!"

THE SOLE SOURCE AQUIFER PROTECTION ACT WILL NOT SOLVE ALL OUR DRINKING WATER PROBLEMS ON LONG ISLAND, BUT IT CERTAINLY IS A STEP IN THE RIGHT DIRECTION. BY SOME STRANGE TWIST OF FATE THE CENTRAL SUFFOLK PINE BARRENS, THE PRIME WATER RECHARGE ZONE FOR LONG ISLAND, HAVE MANAGED TO REMAIN RELATIVELY UNDEVELOPED. THIS AREA OF APPROXIMATELY 110,000 ACRES HAS JUST THE RIGHT MIXTURE OF SAND, GRAVEL AND CLAY TO ABSORB AND CLEANSE ENORMOUS AMOUNTS OF RAINWATER. ITS LOCATION, IN CENTRAL SUFFOLK, INSURES THAT GROUNDWATER RECHARGED THROUGH THE PINE BARRENS WILL NOT BE CONTAMINATED BY POLLUTED WATERS TO THE EAST OR WEST. BECAUSE THE PINE BARRENS STRETCH ALONG A HIGH RIDGE, RAINWATER WILL PENETRATE MORE DEEPLY INTO THE AQUIFER. BY PROTECTING THE PINE BARRENS, THE DEEPEST AND PUREST GROUNDWATER WILL BE KEPT CLEAN AND UNCONTAMINATED. FOR THE SAKE OF ALL CURRENT AND FUTURE RESIDENTS OF LONG ISLAND, I WOULD URGE THE DESIGNATION OF THE CENTRAL SUFFOLK PINE BARRENS AS A SPECIAL PROTECTION AREA.

I HAVE REVIEWED THE SOLE SOURCE AQUIFER PROTECTION ACT AND I WOULD LIKE TO COMMENT UPON TWO SEGMENTS OF THE BILL THAT I FEEL DESERVE SPECIAL ATTENTION.

ONE SECTION DEALS WITH THE TIME PERIODS ALLOCATED FOR THE GOVERNOR AND THE ENVIRONMENTAL PROTECTION AGENCY TO APPROVE ACTIONS UNDER THIS LEGISLATION. IF ALL THE VARIOUS OFFICIALS TOOK THE FULL AMOUNT OF TIME ALLOTTED APPROVAL WOULD INVOLVE A VERY LONG PROCESS. I AM NOT A PROPONENT OF HASTY ACTION, BUT I FEEL IN THIS CASE, EXPEDIENCY SHOULD BE STRESSED. THEREFORE, I WOULD HOPE THAT WHEN THIS BILL IS ENACTED, PROVISION WILL BE MADE TO INSURE THAT EPA AND THE GOVERNOR REVIEW THE MATERIAL PRESENTED IN A TIMELY FASHION.

THE OTHER SECTION I WISH TO COMMENT UPON IS THE SECTION CONCERNED WITH THE ESTABLISHMENT OR DESIGNATION OF A PLANNING ENTITY TO DEVELOP A COMPREHENSIVE MANAGEMENT PLAN. THE LANGUAGE IN THE BILL INDICATES THAT THE PLANNING ENTITY SHOULD HAVE ADEQUATE REPRESENTATION FROM LOCAL MUNICIPALITIES TO ASSURE THEIR PARTICIPATION THROUGHOUT THE PLANNING PROCESS. THIS IS EXTREMELY IMPORTANT. WE MUST REMEMBER THAT GROUNDWATER CONTAMINATION DOES NOT RESPECT MAN MADE BOUNDARIES. WATER PROTECTION IS A REGIONAL CONCERN. THEREFORE, ADEQUATE REPRESENTATION FROM ALL CONCERNED JURISDICTIONS IS HIGHLY DESIRABLE. ON LONG ISLAND WE ALREADY HAVE A REGIONAL PLANNING ENTITY WITH A WEALTH OF EXPERTISE AND KNOWLEDGE IN REGARD TO GROUNDWATER, THE LONG ISLAND REGIONAL PLANNING BOARD. PERHAPS LANGUAGE CAN BE ADDED TO THIS BILL, STIPULATING THAT WHERE A KNOWLEDGEABLE REGIONAL PLANNING BODY ALREADY EXISTS, IT SHALL BE CONSIDERED FOR DESIGNATION AS THE AGENCY RESPONSIBLE FOR THE DEVELOPMENT OF A COMPREHENSIVE MANAGEMENT PLAN.

FINALLY, IN CLOSING, I WOULD LIKE TO THANK SENATOR DANIEL PATRICK MOYNIHAN AND REPRESENTATIVE WILLIAM CARNEY FOR DRAFTING THIS VITALLY IMPORTANT PIECE OF LEGISLATION, AND THIS SUB-COMMITTEE FOR HOLDING HEARINGS. PURE, CLEAN AND UNCONTAMINATED DRINKING WATER IS CRUCIAL FOR THE SURVIVAL OF LONG ISLAND. WE MUST ALL WORK TOGETHER TO INSURE SAFE DRINKING WATER FOR THE MANY GENERATIONS TO COME.

IN THE WORDS OF ROWLAND HOWARD;

"WASTE NOT, WANT NOT, IS A MAXIM
I WOULD TEACH.
LET YOUR WATCHWORD BE DISPATCH,
AND PRACTICE WHAT YOU PREACH;
DO NOT LET YOUR CHANCES LIKE
SUNBEAMS PASS YOU BY;
FOR YOU NEVER MISS THE
WATER TILL THE WELL RUNS DRY."

THANK YOU.

Testimony to the U.S. Senate Committees on Environment and Public Works

by Gregory J. Blass, Esq.
Member of the Suffolk County Legislature of New York

Good Morning, ladies and gentlemen.

Let me begin by expressing my gratitude to the Committee for allowing my participation in these hearings today.

I wish to speak in very strong support for the amendment to the Safe Drinking Water Act of 1974, which amendment is sponsored in the Senate by Mr. Moynihan, and in the House by Mr. Carney.

The federal government, through the EPA, has already recognized the critical role of the Long Island Pine Barrens, having designated them as one of eight sole source aquifers in the entire nation. Local government, too, has determined that the Pine Barrens of Long Island will determine the very future of Long Island as a Community. To illustrate, permit me to invite your attention to the area of L.I. which I represent as an elected official on the County level. My district covers the North and South Forks of Eastern L.I. with a population of over 120,000 permanent residents and a summer population in excess of twice that many. The East End of Long Island is surrounded by bodies of salt water. Most of the residents drinking water is derived from private underground wells. Some municipal and private water districts exist, but they too rely on the underground water table for their source.

The fresh water supply below the ground in my district is the only source of drinking water, as is the case in most of Long Island. The East End suffers a more unique threat to this water supply, however, that is not as common to much of the rest of Long Island. First is the shallow nature of the fresh water supply on the East End. There, just beneath the fresh water table lies salt water. Drilling more deeply invariably draws brackish or totally salt water. The consequence of this shallow characteristic of the East End's water supply seems to be our dependence on the fresh water that lies considerably close to the ground's surface. This in turn compounds our water supply's sensitivity to those activities above ground. Nowhere then in Eastern Suffolk are we more aware of the principal that what we do above ground will affect our water resources below ground. This is especially true due to the porous nature of our soil, and the soils absorption and leaching qualities.

This brings us to a major industry of Suffolk County--agriculture. Suffolk County is the major farming county in N.Y. State,* and N.Y. State still stands as the twelfth agricultural producer in the Union. In Eastern Long Island, easterly of the Long Island Pine Barrens, you will find most of Suffolk's farming area producing $80 million of private revenues each year. As everywhere else, agriculture in Suffolk County has grown increasingly dependent on chemicals, especially pesticides and herbicides. The intensity of this chemical usage has been poorly regulated by all levels of government, including the EPA. This is not to suggest that Suffolk's farmers consistently violated various pesticide regulations--it is to suggest that the regulatory agencies actually certified the use of toxic chemicals for agricultural purposes on the East End without taking into consideration the unique water table and soil characteristics. This results, we are sure from a situation that is a subject of concern which goes beyond the scope of this hearing, and that the conspiracy of the chemical companies, and the unfortunate reliance of even the government regulatory agencies upon these manufacturers, for laboratory research and other information for certification purposes.

Discoveries have occurred over the last several years clearly indicating the presence of nitrates, pesticides and herbicides in the private and public well supplies of much of the area of Eastern Long Island. Farmers seem to have been singled out, quite unfairly, as the culprit. I Have testified here in Washington on a previous occasion before the EPA urging that closer attention is needed regarding the nationwide syndrome that the lawns of our homes, schools, golf courses, hotels and so on must be green and weed-free. Chemical usage for residential and commerical lawn-care has also risen to epidemic proportions.

---

*According to the N.Y. Senate and U.S. Depts. of Agriculture.

The reason for the importance of the preservation of an incontaminated source of drinking water such as the Long Island Pine Barrens lies in the foreboding conclusion of Suffolk County's own Health Services Department of last fall that the chemical contamination of drinking water wells of Eastern Long Island will remain for many years to come, and will spread and very likely get worse as it affects more and more well facilities. If indeed this apprehension proves accurate, then preventive management of our water resources by local government may be to no avail. The high-level pine barrens, as yet free of development and the contamination that goes with it, become even more critical to our survival. Even with the success of the preventive water management program on the County level, which unfortunately we have only begun, the availability of an uncontaminated drinking water source will be essential.

Permit also to invite your attention to a broader view of the Long Island water situation. You will recall a previous point in this statement regarding the inability of residents of the East End to drill more deeply for well water due to salt water intrusion. The practice of drilling more deeply for clean water served as a foundation of water management policy in Long Island for years. Rather than addressing the causes of pollution of the underground water supply, private residents or business establishments or municipalities simply drilled other wells, or deeper wells to find areas of the water table which had not yet been contaminated. For decades, Long Island communities ignored the fact that indeed it was and still is an island, overlooking as well the fact that that a water supply is a limited resource.

Presently, Nassau County, Suffolk County's westerly neighbor on Long Island, has devised what can very well be called a scheme of piracy, water piracy, to be exact. That scheme involves published intentions* to establish major public well water facilities along Nassau's border with Suffolk County. The cause and effect of this plan deserve mention. The cause lies in the lack of a water management program in Nassau at a time when development spread through Nassau by leaps and bounds; Nassau County, which lies between New York City and Suffolk County, has lost most of its good drinking water. The effect of this plan goes without question: Suffolk will lose water to Nassau as a direct result of the latter's wells along the border. Suffolk County's water needs will be intensified in great measure should this Nassau plan be implemented, and no legal ground exists to prevent it. Nassau cannot be faulted entirely for this effort. After all, years ago, New York City drilled the same kind of well facilities along its easterly border with Nassau County, and now Nassau seeks to do the same along its easterly border with Suffolk County. Without preservation of the Long Island Pine Barrens, Suffolk County's easterly choice is the Atlantic Ocean.

Before we leave the subject of need for this legislation regarding the L.I. Pine Barrens, let me describe Suffolk County's Southwest Sewer District, a true local government nightmare. This $700 million project with additional millions in State and federal support, supposedly had the benefit of the oversight of federal agency expertise. Every aspect of the design of this sewer project, which recently went on line, fell under the closest scrutiny of the various regulatory agencies. In addition to providing sewer connections to almost 80,000 Suffolk County households and firms, the sewer district hopefully would protect the water supply of Long Island. However, this island sewer project contains an outfall pipe that leads to nowhere else but the Atlantic Ocean, into which will flow on a daily basis millions of gallons of what was originally clean, Long Island underground water. A lower water table will be the obvious result, although how much and with what effect will still be the subject of debate.

---

*Nassau County Master Plan of 1980.

SUGGESTED REVISIONS

Let us turn briefly to the amendment to the Safe Drinking Water Act which provides for the preservation of the Long Island Pine Barrens.

First: The variety of preservation techniques offered in the bill to protect aquifers provides an excellent approach. Expanding this variety, if at all possible, should be considered. Assistance in enforcement of land use limitations might be one such possibility.

Second: Those provisions relating to the establishment of special protection areas with a process that is initiated by local municipalities are good provisions and should be commended. Review by the State of the municipality's initating petition, as well as the boundaries of the special protection area that is sought is also most helpful. It is suggested, however, that the comprehensive management plan should be formulated both by State and County planning agencies with at least one local government other than County government (e.g. village or town), rather than leaving the Governor the broad discretion to select a planning agency for this purpose. Moreover, provision should be made that once the management plan is so formulated and complete, it should not go into effect without review and approval by the local municipalities affected. Only after this process should the management plan be reviewed and approved by the Governor. It is respectfully submitted that the foregoing approach would assure a home-rule dimension to this process, which will assure its success. Many a potentially valuable public initiative has failed because this aspect, and its significance as a feature of Long Island politics, have been overlooked.

Third: Question is raised as to the propriety of limiting an application under this proposal to a sum of $20 million. Provision is suggested allowing for greater amounts if an application needs and deserves more.

Fourth: Although not directly associated with the drafting or provisions of this legislation, I would urge the good offices of this Committee to be directed towards the Environmental Protection Administration to perform a study of the Long Island Pine Barrens. This study, at a cost of $500,000, will enhance studies of the Long Island Pine Barrens already undertaken by local government. I make this request to the Committee at this time in earnest reference to the points I have raised regarding the drinking water situation on Long Island, where time is of the essence. The EPA study, if it is performed, will enhance Long Island's eligibility under the historic legislation now proposed in this Committee.

In conclusion, let me congratulate the sponsors and the Committee members for their resourceful initiative in bringing this vital legislation to this stage. Please be assured that many citizens for generations to come will regarding these deliberations with the utmost gratitude.

SENATOR CAESAR TRUNZO
CO-CHAIRMAN

STATE OFFICE BUILDING
HAUPPAUGE, NEW YORK 11787
(516) 979-5336

EDWARD N. CANTOR
CO-DIRECTOR

NEW YORK STATE
LEGISLATIVE COMMISSION
ON WATER RESOURCE NEEDS
OF LONG ISLAND

ASSEMBLYWOMAN MAY W. NEWBURGER
CO-CHAIRWOMAN

43 S MIDDLE NECK ROAD
GREAT NECK, NEW YORK 11021
(516) 482-7722

SARAH J. MEYLAND
CO-DIRECTOR

May 18, 1982

The Honorable Daniel Patrick Moynihan
442 Russell Senate Office Building
Washington, D. C. 20510

Dear Senator Moynihan:

Please find enclosed my testimony for submission to the Toxic Substances and Environmental Oversight Subcommittee of the Committee on Environment and Public Works' hearing on proposed amendments to The Safe Drinking Water Act. I regret that I cannot be in Washington to deliver these remarks personally, but the Legislature is in session and I am anticipating consideration of the death penalty and other issues of great importance.

The enclosed statement is submitted with my support for S.2131, The Sole Source Aquifer Protection Act, and for all other measures which will strengthen and broaden the scope of The Safe Drinking Water Act.

Very truly yours,

May W Newburger

May W. Newburger
Member of Assembly

MWN:mr

SENATOR CAESAR TRUNZO
CO-CHAIRMAN

STATE OFFICE BUILDING
HAUPPAUGE, NEW YORK 11787
(516) 979-5336

EDWARD N. CANTOR
CO-DIRECTOR

ASSEMBLYWOMAN MAY W. NEWBURGER
CO-CHAIRWOMAN

43 S. MIDDLE NECK ROAD
GREAT NECK, NEW YORK 11021
(516) 482-7788

SARAH J. MEYLAND
CO-DIRECTOR

NEW YORK STATE
LEGISLATIVE COMMISSION
ON WATER RESOURCE NEEDS
OF LONG ISLAND

TESTIMONY BY

ASSEMBLYWOMAN MAY W. NEWBURGER

BEFORE THE

TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT SUBCOMMITTEE

OF THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

HEARING ON

PROPOSED AMENDMENTS TO THE SAFE DRINKING WATER ACT

MAY 19, 1982

The reauthorization of The Safe Drinking Water Act provides a welcome opportunity to examine the effectiveness of the Act, its scope and powers, and its role as a major component of a seminal package of Federal legislation which protects the nation's environmental integrity as well as the public health. The Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act have all resulted from the growing awareness of recent decades that natural resources can no longer be taken for granted -- that their degradation means not only the destruction of a wide range of natural processes and environments, but the threatening of health and well-being as well. Recognition of such threats on the part of government as well as the general public has often come from visible evidence of the despoilation of shared resources such as air, rivers, lakes and streams.

As a member of the New York State Assembly and a citizen of Long Island, I am concerned about a natural resource which is not visible as are the nation's rivers, lakes and streams, and which has not received due attention from protective legislation. I am referring to groundwater, a resource out of sight, and often out of mind as well, until it is drawn upon to provide drinking water for 50%, over 100 million of this country's inhabitants, as well as for agricultural irrigation, commercial and industrial processes. Groundwater is addressed in Section 1424 of The Safe Drinking Water Act, which establishes the Sole Source Aquifer designation. Eight areas in the country, including the aquifer system underlying Nassau and Suffolk Counties, have been designated as Sole Source areas, due to their reliance on groundwater for over 50% of their drinking water supply and the significant threat to public health which would be posed by contamination of groundwater supplies in the area.

Within designated Sole Source Areas, projects receiving Federal financial assistance undergo special review to assure that they will not damage groundwater.

Perhaps the greatest accomplishment of the Sole Source program to date has been the recognition the designation has brought to our hidden groundwater resource. Now there is before the Committee on Environment and Public Works a bill, S.2131, which will strengthen the Sole Source Aquifer program so that it will not only bring attention to the reliance so many Americans have on groundwater, but will lead the way in demonstrating and facilitating the kind of planning and managing necessary if groundwater reserves are to be protected. The Sole Source Aquifer Protection Act, S.2131, recognizes the existence of watershed lands of critical importance within designated Sole Source areas, and appropriates funds for planning and management of such lands, designated as Special Protection Areas by the Act. While the Act does provide for the use of some funds for acquisition of watershed land, it stresses the use of innovative planning techniques such as clustering and transfer of development rights.

The passage of S.2131 and the implementation of federally funded planning and management programs in Special Protection Areas would mean more than the preservation of the water supply in eight areas throughout the United States. It would mean, in addition, the fashioning of model programs of watershed protection. While the Sole Source aquifer program as it now stands highlights the existence and importance of groundwater supplies, it does not demonstrate the course of action required to prevent degradation of such resources. The programs funded under S.2131 would be models of innovative land use planning in areas where groundwater protection is synonymous with protection of the public health. Long Island is one such area. Designated as a Sole Source Area in 1976, Nassau and Suffolk Counties have experienced serious contamination of water supplies, resulting in well closures, necessitating water treatment in some areas, and instilling in the public a serious concern about possible negative health effects of their drinking water. Threats to groundwater quality have increased with the intensification of land uses on Long Island. While pure water is recharged through a few remaining undisturbed natural areas, contaminated water is easily recharged in heavily populated and highly industrialized areas, as well as in agricultural areas where a variety of biocides are in frequent use. The basic connection between quality of water recharged and land use activities provides the basis for the Sole Source Aquifer Protection Act -- the idea of watershed protection.

Both Nassau and Suffolk Counties still contain largely undisturbed watershed lands. These lands serve as source areas for pure water which flows underground to improve the quality of water recharged through intensively developed areas. Thus, planning to protect remaining tracts of watershed lands in Nassau County, the Pine Barrens of Suffolk County, will benefit all of the citizens of both Counties. A look at the history of one of Long Island's distinctive ecosystems will demonstrate the importance of planning development in the protection of water quality.

THE HEMPSTEAD PLAINS

At one time, 50,000 acres of what is now South Central Nassau County was covered by a prairie known as the Hempstead Plains. Long Island naturalist Robert Cushman Murphy described the Hempstead Plains as follows:

> Prairie...on which it was quaintly believed by many inhabitants that trees could not grow. This territory originally supported a distinctive herbaceous flora that has in large part disappeared. There also market shooting for the golden and upland plovers and the now extinct Eskimo curlew was carried out by droves of gunners who walked beside horse drawn or ox-drawn carts. (Fish-Shape Paumanok, p.17)

Once, the Hempstead Plains stretched from Garden City to the Nassau-Suffolk line. (see attached map) The Plains were dominated by grasses, and were a habitat for a wide diversity of wildflowers, lichens and birds. The grassy environment of the Hempstead Plains contrasted sharply with another distinctive ecosystem on Long Island -- the Pine Barrens -- yet the two had in common their roles as large recharge areas for high quality water.

Of the 50,000 acres of The Hempstead Plains, sixty-six remain today. The disappearance of the Hempstead Plains has been described as the first extinction of a major ecosystem in North America.

The disappearance of the Hempstead Plains had as a corollary largely unplanned, unregulated intensive residential and commercial development as well as some industrial development, along with the creation of major transportation routes. The area where the Hempstead Plains once appeared frosted with purple from the glow of the birdsfoot violet is part of the area experiencing the worst water contamination problems in Nassau County. Maps showing total volatile organic chemicals present in both the Upper Glacial and the Magothy Aquifers indicate that by far the most severe contamination is in the south-central portion of Nassau County.

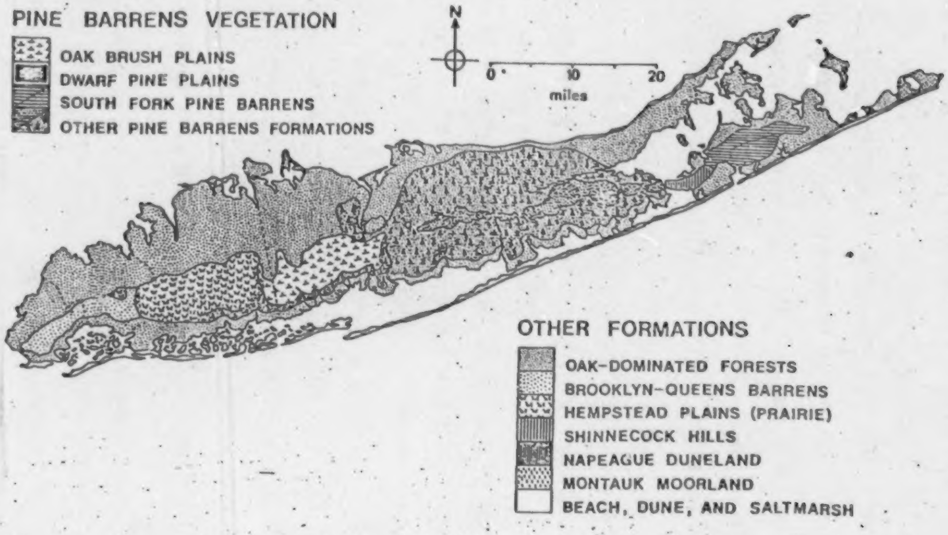
The disappearance of a distinctive ecosystem followed by rampant development and the corresponding appearance of widespread despoilation of water resources is a scenario which is inspired by the history of Nassau County's Hempstead Plains. The repetition of that scenario in the 112,000 acres of Pine Barrens of Suffolk County would be a disaster.

The institution of a Sole Source Aquifer Protection Program will mean that such scenarios will be relegated to history and that we will have had the foresight to protect natural watershed lands for our future. Like the nation's seven other Sole Source areas, Long Island is a diverse area and an integral part of a regional economy. Agriculture, industry, commerce, recreation and education all thrive on Long Island, as do the area's 2.7 million residents. All of them depend on groundwater for life and health, and all depend on their local, state and federal governments for protection of their livelihoods and their lives. Cooperation among all levels of government to protect watershed lands through the implementation of the Sole Source Aquifer Protection Act will assure the continued well-being of Long Island's environment, economy and residents for generations to come.

I urge the committee to strongly support S.2131, the Sole Source Aquifer Protection Act.

Thank you.

MAJOR VEGETATION OF LONG ISLAND


PINE BARRENS VEGETATION
OAK BRUSH PLAINS
DWARF PINE PLAINS
SOUTH FORK PINE BARRENS
OTHER PINE BARRENS FORMATIONS
N
0
10
20
miles
OTHER FORMATIONS
OAK-DOMINATED FORESTS
BROOKLYN-QUEENS BARRENS
HEMPSTEAD PLAINS (PRAIRIE)
SHINNECOCK HILLS
NAPEAGUE DUNELAND
MONTAUK MOORLAND
BEACH, DUNE, AND SALTMARSH

My name is Edward N. Cantor, and I am Co-Executive Director of the New York State Legislative Commission on Water Resource Needs of Long Island. I thank you for this opportunity to testify before you today; I have some comments I would like to offer on the legislation but I first would like to make some general prefatory remarks on groundwater resources. The current concern about the integrity of the nation's groundwater resources has developed concommitantly with our increased understanding of their importance and vulnerability. Dependence on groundwater resources in the United States has been steadily increasing. During the period from 1950-1975, our annual consumption of water derived from the ground grew from 12.4 trillion gallons per day in 1950 to 29.9 trillion gallons per day in 1975, an increase of about 140%. Today, groundwater supplies slightly more than one third of the fresh water consumed in the United States. Although the western states are more dependent on groundwater in general, some densely populated areas in the eastern portion of the country rely on groundwater also. As a sidelight, many of these groundwater dependent areas are overdrafting their water supply (taking up more than is being recharged) emphasizing the need for water conservation. Of all the areas in the United States that rely on groundwater, the most significant population is on Long Island, N.Y.

Long Island has been plagued with many of the same water contamination and management problems other groundwater dependent regions of the country face, but it has been exacerbated by the great density of people found living here. Nearly three million residents on Long Island draw upon the island's groundwater reservoir for all their water needs. Because of this single source of water, the Environmental Protection Agency declared Long Island a sole source area in 1978. Today, there are eight such areas in the country, with Long Island still

BEING THE MOST SIGNIFICANT.

THE GROUNDWATER RESERVOIR UNDERLYING THE LAND SURFACE OF LONG ISLAND IS COMPOSED OF THREE MAJOR AQUIFER SYSTEMS. THE ONE CLOSEST TO THE SURFACE IS KNOWN AS THE UPPER GLACIAL AQUIFER; THE MIDDLE IS THE MAGOTHY AQUIFER; AND THE DEEPEST IS THE LLOYD AQUIFER. ALL OF THESE ARE UNDERLAIN BY A FOUNDATION OF CRYSTALLINE BEDROCK. THESE AQUIFERS ARE MADE UP OF VARYING DEGREES OF SAND, GRAVEL, SILT AND CLAY. THOSE PORTIONS MADE OF SAND AND GRAVEL HAVE THE GREATEST WATER BEARING POTENTIAL WHILE, THE SILT AND CLAY FRACTIONS HAVE LITTLE OR NONE. THE BEDROCK CONTAINS NO APPRECIABLE AMOUNTS OF WATER. THESE UNCONSOLIDATED SEDIMENTS RANGE FROM 0 FEET IN THICKNESS IN NORTHWESTERN LONG ISLAND TO 2000 FEET THICK IN CENTRAL EASTERN SUFFOLK COUNTY. THOUGH THE TOPOGRAPHY OF LONG ISLAND IS GENERALLY OF LOW RELIEF, THERE ARE "HILLY" AREAS IN WHICH THE ELEVATION REACHES 410 FEET ABOVE SEA LEVEL.

SINCE THE UPPER GLACIAL AQUIFER IS THE ONE NEAREST TO THE LAND SURFACE, IT HAS BEEN THE ONE MOST SEVERELY IMPACTED BY CONTAMINATION. AS EARLY AS 1942, SERIOUS GROUNDWATER POLLUTION IN THIS UPPERMOST AQUIFER WAS DISCOVERED. HOWEVER, IT WAS NOT UNTIL THE 1960'S THAT THE FIRST SIGNS OF WIDESPREAD CONTAMINATION APPEARED. IT WAS IN NASSAU COUNTY, WHICH UNDERWENT TREMENDOUS SURBURBAN EXPANSION IMMEDIATELY PRECEDING AND FOLLOWING WORLD WAR TWO, THAT THIS GROUNDWATER CONTAMINATION PROBLEM WAS FIRST DELINEATED. TODAY, WITH 84% OF THE COUNTY DEVELOPED, ALMOST ALL OF THE UPPER GLACIAL AQUIFER HAS BEEN RENDERED UNPOTABLE. IN ADJACENT SUFFOLK COUNTY, THE WESTERN PORTION OF THE COUNTY HAS DEVELOPED SUBSTANTIAL PROBLEMS IN THEIR UPPER GLACIAL AQUIFER. IN THE EASTERN PORTIONS OF THE COUNTY, THIS AQUIFER REMAINS PURE.

THE MAGOTHY WHICH FROM A WATER SUPPLY PERSPECTIVE IS THE MOST CRUCIAL, THE STORY IS BASICALLY THE SAME. DUE TO THE EXTENSIVE DEVELOPMENT IN NASSAU COUNTY MUCH OF THE MAGOTHY HAS DETERIORATED IN QUALITY, WHILE THE MAGOTHY IN SUFFOLK COUNTY, WHICH HAS NOT BEEN AS INTENSIVELY DEVELOPED, STILL IS OF HIGH quality. In the deepest aquifer of Long Island's reservoir system, the Lloyd, 14% of Nassau County's is polluted, while Suffolk County's remains pristine.

What are the activities and resultant materials that have caused this widespread pollution problem? The answer is a complex one, with the materials reading like a inventory of a chemical warehouse. Perhaps the most profligate contamination problem is that which has resulted from the application of turf fertilizers and leakage from septic systems--nitrates. When first discovered, nitrates were thought to represent a serious threat to human health, and although there is a negative health affect by ingesting certain levels of nitrates, there ramifications on human health pale in comparison to those of an uglier, more toxic constituent of Long Island's groundwater--synthetic organic chemicals. Materials such as benzene, toluene, tetrachloroethylene, trichloroethylene, and carbon tetrachloride, to name but a few. These products are common by-products in various industries: plastics manufacturing, plating industries, and hundreds of other activities. We are only beginning to fully understand their widespread proliferation in Long Island's groundwater reservoir.

It is readily apparent from the experiences of Long Island and other populated regions of the country that depend on groundwater as a primary source, that their is a direct relationship between the activities that take place on the land surface and invariable decline of the groundwater found beneath. It might take some time for the contamination to manifest itself, but it will happen.

Quite often government is accused of acting in a crisis fashion. No doubt that this is often necessary. With respect to water resource protection, the recently enacted federal super fund legislation is such a program. However, operating in this way can be extremely expensive. That is why the legislation before us today, to amend the Safe Drinking Water Act is so essential, for it is a illustrative example of legislation that is

PREVENTIVE RATHER THAN REMEDIAL IN NATURE. FROM OUR EXPERIENCE IN RELATION TO THE WATER RESOURCES OF LONG ISLAND, PROGRAMS THAT ARE PROPHYLACTIC ARE IN THE LONG TERM MUCH LESS EXPENSIVE THAN PROGRAMS THAT ARE DESIGNED TO CLEAN UP EXISTING PRBLEMS. THE OLD ADAGE "AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE" IS VERY TRUE WHEN RELATED TO GROUNDWATER RESOURCE PROTECTION. AS A CASE IN POINT, SOUTHWESTERN SUFFOLK COUNTY RECENTLY COMPLETED A RATHER MASSIVE SEWERING PROJECT. KNOWN AS THE SOUTHWEST SEWER DISTRICT, IT WAS BUILT TO SAFEGUARD THE PUBLIC WATER SUPPLY FROM NITRATE CONTAMINATION. THE FINAL COST OF THE PROJECT WILL BE AT LEAST 1.2 BILLION DOLLARS. IF WE CORRESPONDINGLY, WERE TO PRESERVE THE LONG ISLAND PINE BARRENS AS A FUTURE SOURCE OF DRINKING WATER, NOT ONLY COULD WE HAVE POSSIBLY OBVIATED THE NEED FOR THE SEWER PROJECT, BUT SAVING THIS CRITICAL WATERSHED OF ABOUT 110,000 ACRES WOULD COST ONLY 101.3 MILLION DOLLARS-- ONE TENTH THE COST OF THE SOUTHWEST SEWER DISTRICT. WHAT I AM SUGGESTING THEN, IS ALTHOUGH WE FIND OURSELVES IN A TIME OF FISCAL AUSTERITY, IT BEHOOVES US TO IMPLEMENT PROGRAMS THAT IN THE LONG RUN WILL BE MUCH LESS COSTLY TO TAXPAYERS. THE AMENDMENT TO ALLOW FOR THE PROTECTION OF "SPECIAL PROTECTION AREAS" WITHIN DESIGNATED SOLE SOURCE AQUIFERS IS CERTAINLY SUCH A PROGRAM.

IT IS IMPERATIVE IN YOUR DELIBERATIONS THAT YOU FULLY UNDERSTAND THE INHERENT DIFFERENCES BETWEEN SURFACE WATER WATERSHEDS AND GROUNDWATER WATERSHEDS. TO DATE, MOST OF THE ATTENTION THAT HAS BEEN FOCUSED BY THE VARIOUS ENVIRONMENTAL REGULATORY AGENCIES HAS BEEN ON SURFACE WATER RESOURCES. IT HAS ONLY BEEN OVER THE PAST SEVERAL YEARS THAT GROUNDWATER RESOURCES HAVE BEEN GIVEN THE IMPORTANT ATTENTION THEY NOT ONLY DESERVE BUT DESPERATELY NEED. FOR YOUR EDIFICATION, I WOULD LIKE TO EXCERPT A PORTION OF OUR LAST ANNUAL REPORT CONCERNING IMPORTANT ASPECTS OF CRITICAL GROUNDWATER WATERSHEDS IN NEW YORK STATE. OF COURSE THIS MATERIAL IS APPLICABLE THROUGHOUT THE NATION.

1. GROUNDWATER WATERSHEDS CAN BE GENERALLY IDENTIFIED USING EXISTING

SOIL, GEOLOGICAL, PHYSIOGRAPHIC, AND OTHER DATA.

2. GROUNDWATER WATERSHEDS ARE AS IMPORTANT TO THE PRESENT AND FUTURE ECONOMIC AND SOCIAL WELL-BEING OF THE PEOPLE OF THE STATE, AS SURFACE WATER WATERSHEDS.

3. GROUNDWATER WATERSHEDS ARE VULNERABLE TO CONTAMINATION FROM THE SAME ARRAY OF POLLUTION SOURCES THAT CAN DEGRADE SURFACE WATER WATERSHEDS BUT BECAUSE OF THE MUCH LONGER "RESIDENCE TIMES" OF CONTAMINANTS, ARE MORE VULNERABLE TO PERMANENT LOSS OF QUALITY WATER FOR PUBLIC SUPPLY PURPOSES.

4. GROUNDWATER WATERSHEDS SHOULD BE PROTECTED AS SOON AS POSSIBLE THROUGH PURPOSEFULLY DESIGNED LAND USE AND PRESERVATION CONTROLS IN A MANNER ANALOGOUS TO TRADITIONAL WATERSHED-LAND USE CONTROLS WITHIN SURFACE WATER WATERSHEDS THAT WE USE FOR PUBLIC SUPPLY PURPOSES.

5. THE ECONOMIC COSTS TO THE CITIZENS OF NEW YORK STATE BY IMPLEMENTING THIS POLICY OF PRESERVATION AND LAND USE CONTROL WILL BE SIGNIFICANTLY LESS THAN THE INEVITABLE TECHNOLOGICAL OR STRUCTURAL ALTERNATIVES TO GROUNDWATER WATERSHED PROTECTION THAT WILL OTHERWISE EVENTUATE.

I HAVE ENCLOSED THESE IDEAS TO ELUCIDATE THE IMPORTANCE GROUNDWATER RESOURCES PLAY IN THE OVERALL WELL-BEING OF NEW YORK STATE, AND IF WE EXTRAPOLATE, THE NATION.

STUDIES INDICATE THAT IT TAKES UP TO 800 YEARS FROM THE TIME RAIN FALLS ON THE CENTER OF LONG ISLAND TO THE TIME IT TAKES TO SINK INTO THE GROUND, JOIN THE GROUNDWATER AND SLOWLY MOVE TO A POINT SEAWARD OF THE SOUTH SHORE BARRIER ISLANDS, SUCH AS JONES BEACH. IN THE LLOYD AQUIFER, THE DEEPEST, THE SAME PROCESS TAKES ABOUT 3000 YEARS. THESE VERY SLOW "PURGING" RATES UNDERSCORE THE NECESSITY OF PRESERVING FORESTED OPEN SPACE AS "SPECIAL PROTECTION AREAS".

IF WE ARE NOT SUCCESSFUL IN OUR ENDEAVORS TO PRESERVE THE REMAINING WATERSHED AREAS ON LONG ISLAND, WHAT ARE OUR ALTERNATIVES? THERE ARE NOT MANY.

We can hope to pump water from the New York City system, but this is highly unrealistic since the city is at present at capacity, and the construction of the badly needed #3 tunnel (which will cost several billion dollars) is at least twenty-five years away. We can then implement treatment at the wellhead (installing carbon filters to cleanse the water as it passes through it), but this too is extremely expensive. One estimate for this alternative for the Town of Brookhaven (which contains about one tenth of Long Island's population) is $260 million dollars. A third alternative, desalinization, is also unrealistic since it requires a tremendous amount of energy. Clearly, the most cost effective approach is to preserve the remaining forested watershed areas left on Long Island.

I have carefully reviewed Senate Bill 2131 and find it to be a urgently needed "missing piece" in our attempts at water resource protection. Although a wide array of programs are in place to insure high quality water to the general public, few, if any, have the proper perspective of prevention in mind. With the increasing evidence of serious groundwater contamination being discovered throughout the United States, the passage of the legislation before you is not only important to the 75 million residents dependent on groundwater but absolutely vital. Gentlemen, I urge you to support this innovative legislation.

Thank you.

TOWN OF EAST HAMPTON
159 Pantigo Road
East Hampton, New York 11937

MARY A. FALLON
SUPERVISOR

(516) 324-4140

March 9, 1982

Honorable Daniel P. Moynihan
442 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Moynihan:

Enclosed is a certified copy of the resolution adopted by the Town Board concerning the "Sole Source Aquifer Protection Act of 1982", supporting passage of this bill.

The Pine Barrens are extremely important to the source and quality of our water supply, and on behalf of our constituents, we urge your support of this bill.

Sincerely,

MARY A. FALLON
Supervisor

il
Enc.

This resolution was offered by Councilman King seconded by Councilman Finazzo and adopted:

WHEREAS, a major portion of the Pine Barrens are located within the Town of East Hampton, and

WHEREAS, the Pine Barrens are an environmentally sensitive area and unique natural resource in that this area which serves to recharge the sole source aquifer which provides the Town with pure drinking water, and

WHEREAS, legislation has been introduced in the United States Congress House Bill # 5762 and Senate Bill # 2131 which would enact the "Sole Source Aquifer Protection Act of 1982", and

WHEREAS, this legislation would provide a procedure to better preserve this unique resource, therefore be it

RESOLVED, that the Town Board supports the enactment by the Congress of the proposed "Sole Source Aquifer Protection Act of 1982" and

RESOLVED, that a copy of this resolution be forwarded to Congressman William Carney and Senator Alphonse D'Amato and Senator Daniel Moynihan.

STATE OF NEW YORK
Suffolk **County**
Office of the Clerk of the
TOWN OF East Hampton
} ss:

(SEAL)

This is to certify that I, Charles T. Anderson, Town Clerk of the Town of East Hampton in the said County of Suffolk have compared the foregoing copy of said resolution with the original now on file in this office, and that the same is a correct and true transcript of such original resolution and the whole thereof.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Town this 9th day of March 19 82

Town Clerk of the Town of East Hampton
Suffolk County, N. Y.

KENNETH C. BUTTERFIELD, Supervisor

CONSERVATION BOARD

February 22, 1982

The Hon. Senator Daniel P. Moynihan
733 Third Avenue
New York, New York 10017

Dear Senator Moynihan:

The Huntington Conservation Board salutes your innovative approach to Long Island Pine Barrens Preservation. The amendment that you have sought to the Safe Drinking Act seeking funding to purchase land above prime water supply areas is timely, most important and truly refreshing in this period of federal environmental budget restraints.

Our volunteer Conservation Board is committed to protecting the natural resources within Huntington Township. The question of watershed protection, however, has no town boundaries, particularly here on Long Island where our entire population is dependent on a sole source aquifer.

We urge you to continue your efforts to insure passage of this legislation which could well affect every Long Islander.

Please keep us informed on the progress of this amendment.

Very truly yours,

CONSERVATION BOARD

Joy Squires

JS:MM:lb

Joy Squires
Chairperson

cc The Hon. A. M. D'Amato
Supervisor Butterfield

JOY S. SQUIRES, Chairperson • 17 CLARISSA LANE • EAST NORTHPORT, N.Y. 11731 • 516-368-6949

GROUP FOR THE SOUTH FORK, INC.
BOX 569, BRIDGEHAMPTON, NEW YORK 119[illegible]
PHONE 516-537-1400

GARRICK C. STEPHENSON
CHAIRMAN

WILLIAM F. DUDINE, JR.
PRESIDENT

AUDREY AND CHARLES [illegible]
EXECUTIVE DIRECTORS

May 12, 1982

Senator Daniel Moynihan
442 Russell
Senate Office Building
Washington, D.C. 20510

Dear Senator Moynihan:

Enclosed please find the Group for the South Fork's written testimony to the Environment and Public Works Committee on the re-authorization of the Safe Drinking Water Act. Our comments are specifically in regard to the Sole Source Aquifer Protection Act of 1982 amendment (S2131).

Sincerely,

Nancy Nagle Kelley

Nancy Nagle Kelley
Planner

GROUP FOR THE SOUTH FORK, INC.

BEFORE THE UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

COMMENTS ON THE REAUTHORIZATION OF THE SAFE DRINKING WATER ACT

by: Nancy Nagle Kelley, Planner
Group for the South Fork
Box 569
Bridgehampton, N.Y. 11932
516-537-1400

Date: May 12, 1982

In the decade of the 1980's, we are faced with a problem of increasing proportion governing both the loss of sufficient water supplies and the loss of water purity at local, regional and national levels. Traditional water supplies are being depleted and contaminated, as ground water recharge areas are being converted to development.

Based on this realization, it is clear that preventative strategies must be implemented in order to assure that remaining uncontaminated ground water supplies remain pure.

The Group for the South Fork supports S.2131, a bill designed to provide for the protection of certain recharge areas overlying sole-source underground water supplies.

We support this proposed amendment for several reasons.

First, the "Sole Source Aquifer Protection Act" calls for a cooperative local, state, federal government and private sector approach to the development and implementation of comprehensive plans to protect critical watershed areas.

Second, the bill recognizes the important and necessary role of Federal funding and support in implementing protection strategies at the local level. The availability of Federal funds will provide the much needed stimulus for local government bodies to participate in the protection and management of their water resources.

Third, in delineating a variety of land management options, such as clustering, large lot zoning, and purchase of development rights, the bill recognizes that the combined use of techniques will be necessary to protect critical watershed areas.

The Group for the South Fork strongly endorses the Sole Source Aquifer Protection Act. We urge the Committee to fully support the funding and passage of bill S. 2131 in an effort to protect groundwater.

COUNTY OF SUFFOLK

COUNTY LEGISLATURE

JOHN J. FOLEY
LEGISLATOR, 3RD DISTRICT

31 OAK STREET
PATCHOGUE, NEW YORK 11772
(516) 475-5800

May 26, 1982

Hon. Daniel P. Moynihan
United States Senator
733 Third Avenue
New York, New York 10017

Dear Senator Moynihan:

Please add the following supporting statement to evidence recently submitted at Hearings on the Pine Barrens Bill.

My long-standing support for conservation measures to preserve the County's water supply are long known to residents of Suffolk County. The Legislation before the Congressional Committee is a major step in that direction. As a former Chairman of the Committee on Safe Drinking Water and presently a member of the County Legislative Health Committee, I strongly endorse this very basic Legislation which will help us cope with one of the major problems here in this County. Because of our unique geography, it is imperative that we preserve our sole aquifer.

I would like to take this opportunity to compliment you for your initiation of this project. Finally, I would point out that only the need to be present here in the County for a Special Meeting of the County Legislature (Subject: LILCO) prevented my attending the Hearing and making these comments in person.

Sincerely yours,

John J. Foley
County Legislator

JJF:an

SAFE DRINKING WATER ACT

WEDNESDAY, MAY 26, 1982

U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,

Washington, D.C.

The subcommittee met, at 10:10 a.m., in room 4200, Dirksen Senate Office Building, Hon. Slade Gorton (chairman) presiding.

Present: Senator Gorton.

OPENING STATEMENT OF HON. SLADE GORTON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator GORTON. Good morning. This is a hearing, of the Subcommittee on Toxic Substances and Environmental Oversight, a subcommittee of the Senate Environment and Public Works Committee. This hearing, which is a continuation of two previous hearings on March 29 and May 19, furthers the effort by this subcommittee to improve the implementation of the Safe Drinking Water Act by the Environmental Protection Agency, States, and local water supply agencies.

After 2 days of hearings, several facts are readily apparent. Maintaining safe, uncontaminated drinking water for America's cities and communities is a highly important issue to our citizens. When incidents of drinking water contamination are discovered, people want to be reassured that our public officials are taking appropriate steps to solve and clean up this contamination. Finally, this subcommittee has heard from several witnesses that there is a relationship between man's activities on land and the quality of ground water below. This subcommittee has heard that ground water contamination in several areas of the country is a serious and growing problem. In light of the information this subcommittee has received on the ground water contamination issue, an additional hearing will be held on June 21, to explore the problem and appropriate responses for Federal, State, and local governments and the private sector.

On May 11, the Environment and Public Works Committee reported a reauthorization bill to the full Senate. This bill contains monetary authorizations for continuation of EPA's 1983 drinking water program.

I will not address the merits of either S. 1866 or S. 2131 at this time. It is my intention to await the completion of these hearings before defining my position on how the Safe Drinking Water Act should be amended.

I should like to welcome as our first witness, Mr. Ken Lowthian, superintendent of the Seattle Water Department.

Ken, you may proceed.

STATEMENT OF KEN LOWTHIAN, SUPERINTENDENT, SEATTLE WATER DEPARTMENT, ACCOMPANIED BY WILLIAM STAFFORD, SEATTLE OFFICE OF INTERGOVERNMENTAL AFFAIRS

Mr. Lowthian. Senator Gorton, members of the subcommittee, I am Ken Lowthian, superintendent of the Seattle Water Department. I am pleased to be here to share my views on the Safe Drinking Water Act and protection of water supplies.

With all the rain and the kidding we get in Seattle about it, you might be wondering what brought me to Washington to talk about drinking water. Actually, the people in the Puget Sound area take their water very seriously. I heard Bill Ruckelshaus speak last week; he is with the Weyerhaeuser Co. working with the economic development council relative to expectations of workers in the Puget Sound area; and their studies have indicated clean water is the most important consideration to the people in the Pacific Northwest as an environmental issue.

I have some very specific concerns to address relating to the Pacific Northwest which I feel should be considered in your deliberations. For those that are not familiar with the naturally pure surface water systems in the Cascade Mountains, let me briefly describe that network.

The Seattle Water Department supplies drinking water to in excess of 1 million people. To provide this water, we draw from manmade reservoirs in two watersheds high in the mountains. These watersheds are located in remote mountain terrain where the precipitation averages 100 inches per year. We made a firm commitment near the turn of the century to guard the purity of the water by protecting its watershed from human activities. As a result, Seattle provides no water treatment beyond routine chlorination.

Watershed protection is neither easy nor cheap. For example, the Cedar River watershed covers over 90,000 acres. Seattle owns about 80 percent of this land while the U.S. Forest Service owns most of the remainder. Seattle will eventually own 100 percent of the land through exchanges with the Forest Service. Fishermen, hunters, and the general public are not allowed into the watershed and trespassers are given citations. Timber harvest is strictly controlled to insure that water quality is protected. Seattle and the U.S. Forest Service entered into an agreement in 1962 that spells out mutual rights and responsibilities toward the goal of water quality protection.

Given the importance we place on watershed protection, I think you will understand our dismay to read in the newspapers recently that the Bureau of Land Management had awarded oil and gas exploration leases on Forest Service land in the protected watershed just described. These leases were awarded with no environmental review, against the recommendation of the Forest Service, and contrary to the spirit of our watershed protection agreement with the

Forest Service. And, I might add, over our very strongly stated objections.

Now, we don't know much about oil and gas drilling, and frankly I have no desire to learn. But what we have found out has convinced us that oil and gas and drinking water don't mix, especially in a protected watershed. Our concerns include:

Erosion and sedimentation associated with road and drill pad construction;

Contamination of surface waters caused by drilling muds due to leakage, pit failures, or blowouts;

Contamination of aquifers from petroleum, drilling muds, or brackish water;

Loss of control over access and sanitary regulation of the watershed; and

An increased risk of forest fire.

Thanks to Senator Gorton and Senator Jackson and the State of Washington congressional delegation, the BLM rescinded those leases. But if the BLM follows its own procedures correctly in the future, the leases could very well be reissued. Thankfully, our delegation has introduced legislation to permanently withdraw four watersheds in the Puget Sound region from oil, gas, and geothermal leasing and drilling. Attached to my testimony are several news items and editorials which demonstrate the degree of public concern and objection over the oil and gas issue in Seattle. The water department is a municiple utility which usually has a fairly low profile, and we are not used to the attention we have been getting from the press on this issue lately, but it is nice to be on such a positive side with so much public support.

I strongly support the withdrawal legislation because it seems to be the only available method of protecting our watershed from exploration and drilling. I would much prefer to be in a position to defend our interests directly through open administrative processes rather than lobby in Congress or argue in court. But I regret the laws, regulations, and policies of the Interior Department force us into supporting such withdrawal legislation.

Seattle's problem with the BLM is probably not unique. Federal agencies—and especially in the West—make many decisions that can affect municipal watersheds. A few of these threats are: Poorly controlled timber harvest, herbicide or pesticide spraying, powerline and pipeline right-of-way designation and management, and highway construction. All of this leads me to suspect that the Safe Drinking Water Act should address the problem of all land use—private, local, State, or Federal—activities that could threaten municipal drinking water supplies.

Unfortunately, I doubt that anyone has enough information either about the scope of the problem or potential solutions. Rather than propose amendments at this time I am urging this subcommittee to include a study amendment to the act which will provide a factual basis for new legislation. But I would not favor another Federal study unless there is significant interest in Congress or EPA to insure that the study will be done thoroughly, on a timely basis, and with proper funding. Too many studies gather dust on our bookshelves and never lead to legislation. Municipal watersheds may ultimately need Federal attention along the lines of the sole source aquifer legislation now pending before you.

Again, I want to stress that this proposed study is in addition, and not a substitute for seeking congressional withdrawal of our watersheds from oil and gas leasing.

Some of the questions that a study should consider are:

How many cities rely on watershed protection as the primary means of preserving water quality? What is the population served?

What is the typical description of a protected watershed?

What measures do cities take to manage protected watersheds?

What activities can and cannot be safely conducted in watersheds?

What percentage of municipal watersheds is federally owned? What rights over the land does the Federal Government retain?

What Federal activities have enhanced or harmed water quality?

Is specific Federal legislation, regulatory reform, or policy change necessary to protect municipal watersheds? How can the Federal Government become a partner in watershed protection?

As I said earlier, my testimony relates to a specific concern we are addressing in the State of Washington.

I would like to now turn my attention to the substance of the Safe Drinking Water Act. Seattle has historically supported Federal legislation to assure that Americans receive safe water to drink. We have not had much difficulty with the act or in meeting the standards. And our relationship with the regional office of EPA has been extremely good. However, the act does need some significant review on a number of issues, including standard setting, mandatory treatment requirements, and notification. There has been continuing debate over the intent of certain key elements, and I am confident there can be meaningful exchanges without adversely affecting the goal of the act, which is to protect public health.

Mr. Chairman, I thank you for the opportunity to present my views on this very important matter. If there are any questions, I would be pleased to respond to them.

Senator GORTON. Thank you very much; you certainly eloquently expressed the concern and the shock which all of the Members of the Washington congressional delegation had at the time of the issuance of those oil and gas leases and our concern about seeing to it that it is not an episode which is repeated.

You do say in your testimony, and we learned at the time of that controversy that Seattle already owns about 80 percent of its watershed and eventually will own 100 percent. Perhaps the first thing you could tell me is, what kind of schedule or plan you have for the acquisition or trade for that balance of 20 percent of the watershed.

Mr. LOWTHIAN. The agreement I mentioned, the 1962 protection agreement with the Forest Service, calls for the exchange of all Forest Service lands with the city over a period of time. We currently—the city—owns land within the State of Washington adjacent to national forest land and which the Forest Service has already indicated they desire to own—so we have land secured that will ultimately be traded with the Forest Service.

The problem is the Forest Service does not want to exchange land until their timber is harvested, so as timber is sold, Forest Service land is exchanged with city lands. This will probably take another 15 to 20 years to complete.

Senator GORTON. Does that land still have timber on it?

Mr. LOWTHIAN. Yes, it basically is all timberland, and there is a sustained program of cutting that limits the yield so that there will not be any adverse effect on water supply.

Senator GORTON. Given the fact that even in a very fortunate place like Seattle, where there is Federal land in a watershed, is it your belief as a general proposition, not simply related to your own community, that there is an appropriate or proper Federal role in watershed protection, or is that protection simply a local concern?

Mr. LOWTHIAN. Well, in the Northwest particularly, and in some parts of the Northeast there are watersheds which have been protected at the source. Seattle, as I indicated, at the turn of the century made a decision to protect the source rather than provide treatment. We have expended our funds and energy in that direction, and basically we want to keep a clean and pure source of water supply.

By doing that we have not had to go to full treatment of our water supply and have saved substantial money for the ratepayer.

We in Seattle have a desire to protect our watershed. Tacoma has a similar goal. We do have a continuing problem with some Federal agencies relative to these objectives.

Senator GORTON. You have also had to protect yourself against State regulation to open up the watershed and deteriorate the original quality of the water?

Mr. LOWTHIAN. There have been efforts, particularly by sportsmen, fishermen, and hunters, to open up portions of the watershed for public use, yes.

Senator GORTON. Is there any private activity which interfers with the Seattle or Tacoma watersheds?

Mr. LOWTHIAN. At the present time in Seattle, a very small part of the area is owned by Weyerhaeuser Timber Co., and we are in agreement with them, that as they complete the logging of their lands, they automatically come to the city of Seattle. That program will be completed in about 5 years.

A substantial amount of Tacoma's watershed is owned privately, but here again, the owner and the city of Tacoma work together.

Senator GORTON. Is controlling land use the only way a municipality such as Seattle can protect its drinking water supply?

Mr. LOWTHIAN. We have elected to do that in a long-range program, and it has, we feel, been successful. Frankly, the Forest Service land is blocked in within the watershed so that while the Forest Service has no regulation against people utilizing Forest Service lands, they are tresspassing on city land to get to it.

Senator GORTON. Obviously other communities utilize something other than land use, I take it.

Mr. LOWTHIAN. Yes.

Senator GORTON. And that often involves rather thorough treatment of the water which they utilize for draining purposes, don't they?

Mr. LOWTHIAN. The full treatment of water, in our case at least, would be a substantial expense on the part of the ratepayer. We estimate that the cost of the treatment plant would be in the neighborhood of $75 million, and about $3 to $4 million annually in operating and maintenance charges. So it is a substantial investment.

Senator GORTON. But that is an investment that many communities had to make.

Mr. LOWTHIAN. Most communities in the United States have made that investment.

We feel our source of supply is of such a quality that that investment is not necessary today; at some point it may be, but even with full treatment, we would still want to protect the source so we would not have to be concerned with some of the problems that your committee has been hearing about over the last couple of weeks.

Senator GORTON. In previous hearinqs on this subject we have heard testimony which criticizes the structure of the Safe Drinking Water Act because it only deals with cleanup of polluted water sources. What you have said here today indicates you think the Safe Drinking Water Act ought to address the problems of all land use which threatens the municipal drinking water supplies.

Do you think that communities with contaminated surface or ground water drinking water supplies should be able to take some kind of administrative or legal action against the upstream sources of the pollution of that water?

Mr. LOWTHIAN. Well, this is not a problem I am personally faced with in my position. Certainly there should be—these are real concerns, and it seems to me that those who are causing the pollution should have some responsibility relative to the cost of getting rid of those particular contaminants.

Senator GORTON. At your request and the request of the city of Seattle, Senator Jackson and I have introduced a specialized bill withdrawing this Federal property from oil and gas and other kinds of leases. Obviously the interest in that specific legislation outside the State of Washington is not especially high, so I would like to ask you a question of a more general nature and see whether or not you think it would help solve your problems.

Section 1424(e) of the present Safe Drinking Water Act provides that, quote:

> No commitment for Federal financial assistance through grant, contract, loan guarantee or otherwise may be entered into for any project which the Administrator determines may contaminate a sole source aquifer to create a significant hazard to public health.

If this provision were extended for municipal watersheds in general, do you feel the Seattle watershed would have been protected against that which has been so controversial?

Mr. LOWTHIAN. I am not sure it would necessarily apply. BLM seems to have, or the Department of the Interior seems to have complete control over the issue of gas and oil leases. We are concerned basically with the surface supply and the contamination of that surface supply. The land use itself is already dedicated to forest practices, either by the city or the Forest Service, and I am not sure the sole-source aquifer——

Senator GORTON. No, the question was if we extended this to watersheds generally——

Mr. LOWTHIAN. Then it should, probably, yes.

Senator GORTON. I think it would be helpful to us if we gave you this question in writing and if you took it to your city attorney and came up with an answer to that question fairly promptly, because there might be more promise in dealing with that direction than dealing with specific legislation, so we will get that specific question to you.

Mr. LOWTHIAN. We will be happy to give rapid response to it.

Senator GORTON. With that I thank both of you, as representatives of the city of Seattle, for coming here and helping us out so much in this inquiry.

Mr. LOWTHIAN. Thank you.

Senator GORTON. Our next witness is Ira Markwood, manager of the public water supplies, Illinois EPA.

STATEMENT OF IRA MARKWOOD, MANAGER, PUBLIC WATER SUPPLIES, ILLINOIS EPA

Mr. MARKWOOD. Thank you, Mr. Chairman and members of——

Senator GORTON. If you will excuse me, sir; I notice your written testimony is very extensive. We have a lot of witnesses here today, and I would greatly appreciate your not reading it but summarizing it in 5 minutes or so.

Mr. MARKWOOD. I had intended to do so.

Senator GORTON. Because the entire written testimony will be included in the record.

Mr. MARKWOOD. I recognize that.

The Conference of State Sanitary Engineers and its members are strongly in favor of the Safe Drinking Water Act. However, in its implementation we have found problems which, in our opinion, require correction. The corrections proposed in S. 1866 will strengthen the act and help achieve its aim of better drinking water for people.

My testimony in section 2 refers to the sections of S. 1866 being discussed. The proposed bill would allow appeals from actions of the Administrator to be filed in the U.S. courts of appeals in judicial circuits, and in addition to that, the District of Columbia Circuit, which the Safe Drinking Water Act now provides for, and we support them completely.

In section 3, S. 1866 proposes procedural requirements for promulgating rules that would improve the quality of the proposals and insure that the proposed rules are necessary and desirable. We support this proposal.

A requirement for benefit/cost analysis also should be incorporated into the act. Benefit/cost analysis includes economic effects, but does not exclude health or intangible effects.

The proposal for revision of those parts of the act relating to standards for promulgation of drinking water regulations is strongly supported, since there is a possibility of adverse effects from almost any substance, including water itself, if large enough quantities are ingested. However, many of these substances, including fluoride, selenium, calcium, and magnesium are needed in minimal quantities in order to maintain the health of the individual. Furthermore, when a substance is removed or reduced beyond the point where it will not pose an unreasonable risk, the cost of water goes up, posing a hardship to the water consumer and tending to drive him to other less safe water sources, such as private wells, which are generally unmonitored. There is no entirely risk-free environment. Consequently the decisions must be based on the magnitude of the risk, and not the fact that there is a risk.

S. 1866 proposes to remove authority for specifying operation and maintenance standards. Any mandatory Federal program for this purpose would be redundant and less flexible, resulting in unnecessary expense and a tendency to freeze technology.

Section 4: The proposed changes in the act include removal of authority for specifying treatment technology. While it is true that at times a treatment technology should be prescribed, these occasions have been very few. There are good reasons for this. First, the engineer studying a specific site and knowing the general economic condition of his client is generally in a much better position to choose the best treatment technique than anyone at any regulatory level. Second, specifying a treatment technique tends to reduce interest in developing new technology, because of the problems which arise in getting the new technology accepted. If the costs are high to obtain approval, to delay until approval is obtained, or if approval is not granted, it would be economically unwise or unsound for an engineer to attempt to replace a prescribed treatment technology in an area where the need for new technology is so great.

Sections 5 and 6: Where there should be a limit for the time allowed to a primacy state to adopt a new regulation or lose primacy, some flexibility must be available. Provisions could be made in the act, or left to the U.S. EPA to set by rule. This same flexibility must be available for eligibility for the State grants.

Section 7: The distribution of membership mandated by S. 1866 will be advantageous. It is recommended this change be adopted. However, I refer you again to my written testimony for more detail.

Section 8: The process set up in the original Safe Drinking Water Act expected the interim regulations to be superseded at an early date by revised regulations. Due to the time lapse, this program is no longer relevant; therefore, there should be revised regulations in the future and not amended interim regulations.

The Conference of State Sanitary Engineers suggests that other aspects of the Safe Drinking Water Act also be studied, and improved as the study results indicated. I refer you to my written testimony for more details.

Thank you.

Senator GORTON. Thank you very much, and as I said before, your entire written testimony will be included in full in the record.

I would like to ask you from your State's perspective, what is your single biggest problem or headache in the administration of the Safe Drinking Water Act? If you could make one change, what would it be?

Mr. MARKWOOD. I think our major difficulty is lack of resources. Our second major difficulty is the lack of understanding of the general public in what must be done to protect their water. There has been relatively little water-related disease for many years, and the public does not realize the organisms are around just looking for a place to strike. There is one mayor in Illinois who says that water disease is a thing of the past.

Senator GORTON. In other words, when you solve a problem no one thinks about it until another problem comes up?

Mr. MARKWOOD. That is correct.

Senator GORTON. Occasionally we have that challenge here as well.

We have heard several people testify about the seriousness of the ground water contamination problem. Is ground water contamination a serious problem in Illinois, and if so, what does your State propose to do to address that issue? Does the State, as a State, have a ground water protection plan?

Mr. MARKWOOD. We have just begun to find that we do have ground water contamination. At the present time we have not gone far enough into the investigation to determine how serious it is, but I would suspect the more we look, the more we will find. We have State regulations which will protect ground water, but the problem I believe is due at this time to things that happened before those regulations existed. We will have to work hard to see that the current regulations are in force, but we will also have to come up with some method for dealing with contamination of ground formations.

Senator GORTON. What do you feel the proper role for the Federal Government is in relation to ground water contamination issues? Simply monitoring, actually providing for protection plans, technical assistance, or something else?

Mr. MARKWOOD. The States individually cannot do the research which is necessary. For example, to determine the question of whether some of these substances are found in water are actually harmful, and if so, in what quantities? That should be done at the Federal level.

Also, there are problems of ground water which do not recognize State boundaries. That requires assistance from the Federal level.

General oversight of the program, general technical assistance, I think should be done at the Federal level. The details of each individual program, I think, are better done at the State level and lower, since in general this type of regulation is best done by the lowest level capable of handling it.

Senator GORTON. You are a member of the present Drinking Water Advisory Council, and as a member of that counsel, what advice would you give us about any additional groups which should be represented on the Council to give a better perspective on drinking water issues?

Mr. MARKWOOD. Well, it is hard for me to say which specific groups. I think that the general makeup of the council is fair and reasonable now. Of course S. 1866 makes some changes in that, and I think that would be advantageous.

There is at the present time a tendency to include only those organizations which are representing the compliance of water which comes from the public water supplies and utilities. It may be wise to look into other organizations which may be involved since in some cases, for example, it might be advisable to have bottled water provided, such as with nitrates, where a very small part of the population is affected. It is very expensive to remove the nitrates, particularly if the bulk of the population would not be affected by it.

So there should be some representation of all of the groups which may be interested in the supply of water in one fashion or another.

Senator GORTON. And one last question. During the course of our last hearing, the council of which you are a member recommended a change in the basic standards of the act to be ones which were triggered by an unacceptable risk standard, using those two words. Does that express your views as well?

Mr. MARKWOOD. Yes; it does. The present wording is much too restrictive since, as I said, any substance can be harmful. The words "unreasonable risk" may be interpreted to be too loose. We think that "acceptable risk" would be a much better criteria.

Senator GORTON. But you would prefer that, you would prefer a change to the present standards before that develops?

Mr. MARKWOOD. Yes.

Senator GORTON. Mr. Markwood, I should like to thank you very much for coming here today and sharing your experiences with us.

Mr. MARKWOOD. Thank you for the opportunity.

Senator GORTON. Our next witness is Eric Eidsness, Assistant Administrator, Office of Water, Environmental Protection Agency, and I believe he has Mr. Kimm with him, and I see one other person with him.

STATEMENT OF ERIC EIDSNESS, ASSISTANT ADMINISTRATOR, OFFICE OF WATER, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY: VIC KIMM, DIRECTOR, OFFICE OF DRINKING WATER; AND GORDON ROBECK, DIRECTOR, DRINKING WATER RESEARCH

Mr. EIDSNESS. Good morning, Mr. Chairman.

Senator GORTON. I see you are accompanied by two persons, will you please introduce them?

Mr. EIDSNESS. My name is Eric Eidsness, I am Assistant Administrator, Office of Water, for EPA, and accompanying me today is Victor Kimm, Director of the Office of Drinking Water at EPA, and Mr. Gordon Robeck, Director of Drinking Water Research, Office of Research and Development in EPA.

We are pleased to appear today before you and the members of the committee to discuss reauthorization of the Safe Drinking Water Act. This is especially important to me, as it is my first appearance before a congressional committee since my confirmation as a member of this administration.

EPA views the Safe Drinking Water Act as an essential element in the national effort to protect public health as it protects the public at the point of potential human exposure. We are generally pleased with the implementation of the act. We realize that any act can be improved, and we appreciate the efforts represented by S. 1866 and other legislation in this regard. S. 1866 raises a number of important issues which we are currently evaluating. We are confident that any changes to the SDWA that may result from the ongoing debate will be made with great care and after thorough deliberation by this committee. In this light, we deeply appreciate the opportunity to discuss these issues with you.

I have provided a more detailed report on the progress made under this act in my prepared testimony and would be pleased to respond to any questions.

Senator GORTON. It will be included in the record.

Mr. EIDSNESS. And I will be pleased to respond to any questions. However, for the sake of brevity, I would like to move to the issues before us.

Regarding modifications to the act, last fall, in looking ahead to the reauthorization of the Safe Drinking Water Act, the Agency solicited public comment on how the act was working and how it might be modified. In early January, EPA published a notice in the Federal Register calling for comment. We received about 150 comments through testimony and the mail, summarized them, and provided them to the National Drinking Water Advisory Council and to this committee. At its March meetings, the Council devoted considerable effort to the assessment of each issue and provided thoughtful recommendations to the Administrator which are being given careful consideration by the Agency.

The Administrator and I have drawn several conclusions from this extensive review. First, and most importantly, the Safe Drinking Water Act provides substantial protection to the public. Second, there are some modifications to the program which may be required, principally to provide greater flexibility to States to make the program more effective without any reduction in public health protection. Some of these changes can be carried out through administrative action. Some may require amendment of the act.

As stated earlier, the issues raised in S. 1866 are undergoing interagency review. We have no administration position at this time. However, I will nevertheless address some of the questions, concerns, and advantages that relate to those proposals. In addition, I will offer four suggestions for minor changes to the act which we would like you to consider and which I believe will improve the efficient implementation of the Safe Drinking Water Act.

One provisions which has presented some persistent problems for water suppliers and States is the requirement that public water suppliers notify customers of all violations of the drinking water standards. This concept of self-enforcement through public notification is sound and definitely should be retained. However, the act's requirement for notification of all violations has led both to selective noncompliance and to dilution of notices of significant violations.

We suggest that the form and the nature of public notification requirements be left to regulatory action by the Administrator. Those regulations should distinguish notification required for minor or nonrecurring violations from persistent or serious violations. In this way, the public would receive full notice of failures which could impact their health or where systems persistently refuse to comply with monitoring requirements. The States should have more flexibility in the method of informing the consuming public, particularly in instances of minor infractions. Also, different approaches may be needed in large and small communities.

The National Drinking Water Advisory Council also strongly supported this suggestion.

Our second suggestion addresses a technical issue related to the issuance of revised regulations. The act envisioned that the study conducted by the National Academy of Science would identify safe levels as goals which are referred to in the legislation as recommended maximum contaminant levels. While the exhausting deliberations of the National Academy of Science provided much useful scientific information, they did not include the specific health goals envisioned in the legislation. To deal with this problem we suggest that the Administrator be permitted to use the National Academy of Science studies as well as other information in developing revised primary drinking water regulations.

The act provides that the health goals must be proposed and promulgated before proposal of enforceable revised MCL's standards. This would be extremely confusing to the public and could interfere with our goal of an informed public debate as part of the standard-setting process. We suggest that EPA be permitted to propose health goals and enforceable standards together and to promulgate them together. The National Drinking Water Advisory Council supports this suggestion.

Our third suggestion comes from our experience in operating the program. Currently, EPA's only enforcement authority in the seven nonprimacy States and territories where we have direct responsibility is to bring a recalcitrant system into Federal court. Public notification and jawboning will lead some water suppliers to comply but others stubbornly refuse. Additional mechanisms to foster compliance among recalcitrant systems may be appropriate.

Our suggestion would give EPA the authority, in nonprimacy States only, to issue administrative orders to noncomplying public water systems and possibly to impose small fines. States with primacy now successfully use such administrative provisions as part of their compliance efforts. The National Drinking Water Advisory Council supports this idea provided it is limited to use in states where EPA retains jurisdiction.

We seek the support of this committee in considering these limited, but important suggestions. We believe they will improve our ability to administer this act effectively.

Regarding administrative changes, in the course of our public dialog, a number of issues emerged which we have or can remedy through administrative action. We believe that the act provides sufficient flexibility to make a number of appropriate changes which were suggested by the National Drinking Water Advisory Council and the public commentors. I would like to review our plan.

A concern we share with the States is the need to provide greater flexibility in monitoring requirements and standards in circumstances where their rigid application makes no sense. Where, for example, naturally occurring contaminants are not found in the water supply, it is unnecessary to monitor as frequently as where they are found. We believe that we have adequate authority to address such problems under the existing legislation and will deal with these legitimate problems in the revised primary drinking water regulations. This approach is supported by the National Drinking Water Advisory Council.

We are also taking administrative actions in response to public concerns about the provision of health advice to states and utilities on unregulated contaminants. We and the states believe that it is useful and necessary to continue to do so. We are, however, working to improve this system by asking EPA's Science Advisory Board to review our scientific methods. We will continue to make it clear that these advisories are nonregulatory in nature and should be viewed as discretionary advice for states and utilities to use as they deem appropriate. The National Drinking Water Advisory Council agrees.

Another problem is what to do in those rare circumstances where a system slightly exceeds some standard and is unable to come into compliance. This may be the case for a significant number of very small systems. The existing legislation provides for short-term exemptions and longer term variances to provide legal status for systems truly unable to comply as long as the resulting risk to the public does not constitute an "unreasonable risk to health." Variances are further conditioned in the legislation to the installation of "generally available technology" as determined by the Administrator. We believe that EPA can be sensitive to technical and economic realities in defining "general available technologies" and provide states with an opportunity to review on a case-by-case basis circumstances where technologies may or may not be feasible.

In developing revised primary regulations we will explore ways for EPA to define "generally available technology" based on differences in the source water quality, technological feasibility, and cost factors. This will assist the States to better determine whether a variance is appropriate on a case-by-case basis. The National Drinking Water Advisory Council agreed with our general approach to resolving the variance and exemption issue and also suggested a legislative change in this area to more directly provide economic variances and enhanced flexibility to States.

Another area of congressional interest relates to the National Drinking Water Advisory Council. We agree that there are many competent citizens willing to serve on the Council and have appointed 10 new members since this administration took office. The remaining five members are up for reappointment at the end of this year.

Currently 6 of the 15 members hold doctoral degrees in some scientific field, including its new Chairman, Dr. Robert Neal. They represent the private sector, State government and academia. We are increasing the representation of State agencies and industry engaged in underground injection, another important program implemented under the Safe Drinking Water Act.

Let me now discuss several other important potential changes in the legislation which the administration is actively reviewing but has not yet decided its position. Although we at EPA have had a chance to review the National Drinking Water Advisory Council's recommendations, several other interested agencies are currently conducting their review. Because the final report was issued in April, I expect this evaluation will be completed in early June and anticipate the administration to determine its position and notify the committee soon thereafter.

The bills before the Congress would change the basis for setting drinking water standards from "in the judgment of the Administrator, may have any adverse effect on the health of persons" to "poses an unreasonable risk to the health of the persons."

We are evaluating three areas related to this possible change. The first is the degree to which it would add flexibility for EPA in establishing drinking water standards. The second is the possible differences and similarities between the National Drinking Water Advisory Council recommendations that standards be set based on a concept of "unacceptable risk," and this bill which would base it on a concept of "unreasonable risk." The final area being evaluated is to ascertain the meaning and appropriateness of the terms "unreasonable risk" or "unacceptable risk" from like or similar terms defined in other environmental statutes.

No matter what the outcome on the threshold question, EPA is committed to sound scientific evidence prior to rulemaking and full public debate on all aspects of the balancing determinations prior to promulgation of all future standards.

Another major potential change in the law deals with EPA's authority to require use of particular treatment techniques where monitoring for a particular harmful contaminant is not practical.

EPA has not used this authority in the past. In 1978, we did propose the use of granular activated carbon as a treatment technique for large systems vulnerable to contamination with organic chemicals, but it was subsequently withdrawn. EPA does not envision the frequent use of this authority in the future.

Two issues related to these areas are being evaluated. One is the potential future need for the authority to prescribe treatment techniques in lieu of MCL's given the rapidly developing scientific detection and testing methodology upon which MCL's may be based. The second issue is whether the Act now contains sufficient flexibility to permit States to use alternative treatment methods in lieu of those prescribed by the Agency. The National Drinking Water Advisory Council recommendations reflected this latter concern.

Another set of issues under discussion within the administration deals with the provision within S. 1866 that would require cost benefit analysis of future regulations. EPA now conducts cost benefit analysis on major regulations as a matter of agency policy and in compliance with Executive Order 12291. This is useful and an appropriate step in the rulemaking process and is consistent with the current act.

We are currently evaluating the relationship of this provision in S. 1866 to that in S. 1080 and H.R. 746. Of particular importance is the judicial review requirement and its relationship to other regulatory reform provisions, such as the addition of a substantial evidence test. The administration is currently evaluating whether or not this would be better handled in these generic bills or whether they should be included in enabling statutes. In addition, the flexibility in the current act is being evaluated to determine if major changes to the law are needed.

Finally, I would like to briefly touch on S. 2131, which would provide Federal assistance for local planning to protect recharge areas of sole source aquifers, followed by Federal assistance for implementation, including the purchase of land. I do not believe that it is appropriate or feasible for the Federal Government to become involved in land use decisions which are appropriately functions of local or State government and which this bill could lead to.

We believe that the ground water policy EPA is developing is a feasible approach to enhanced ground water protection. We are accomplishing this through vigorous and consistent implementation of our existing legislation, combined with a growing partnership with the State and local governments which shoulder the primary responsibility for ground water protection. Legislative changes to the Safe Drinking Water Act in this area should only be considered after we have considerably more experience in dealing with ground water contamination and better understand the extent of the problem. I draw the committee's attention to the opposition of the National Drinking Water Advisory Council to this bill.

In conclusion, I believe EPA and the States have made important strides in the protection of public drinking water supplies since the enactment of the SDWA. Clearly more needs to be done, but I believe that the majority of problems can and are being addressed by this administration under the existing legislation. There are several areas in which we have suggested minor amendments to improve effective implementation, but the basic structure of the legislation is sound.

That is the end of my prepared testimony, Senator.

Senator GORTON. To what extent is your Agency influenced by or to what extent does it follow the advice of its Council?

Mr. EIDSNESS. Well, the answer to that, I think Senator, will come when final determination is made concerning some of the issues I raised in S. 1866; but from my perspective, that is a body that is there to advise the agencies, and we should seriously consider all of their recommendations and discuss very thoroughly with the members what the basis for the recommendations were.

I do not believe that we should necessarily, however, be bound by all the recommendations made by this committee, however.

Senator GORTON. But you do intend to give its advice and its work a great amount of weight and not simply use it as an adornment to the process?

Mr. EIDSNESS. That is correct; the Administrator and I are committed to that.

Senator GORTON. You told us at the beginning of your testimony this was your first opportunity to come before us. I would like to ask you the general question of how you intend to administer your agency differently from the way in which your predecessor did, if at all, and what your priorities are?

Mr. EIDSNESS. That is a good question, Senator. I suppose the best way for me to answer that question is to give you some understanding of the principles and that I have adopted as management principles that I have asked employees in the Office of Water to think about and follow, to the extent they can in good conscience, and I will just mention a few of them here.

One of my principles is as we develop programs, policies and processes to implement the Safe Drinking Water Act and the other environmental laws for which I have responsibility, is to adhere strictly to statutory authorities, and also to foster and enhance debates closer to where problems exist, rely upon the creative ability of local government to develop appropriate technologies, and to meet environmental and health goals and standards.

Another principle is to promote programs to prevent and abate pollution where costs are outweighed by benefits to society; and finally, I believe that the more costly the requirement, the stronger it must be founded in scientific evidence with debate among peer groups, those who pollute and those who benefit.

Senator GORTON. Thank you.

I would like to ask you the same question I asked the previous witness. What do you feel the greatest single weakness to the Safe Drinking Water Act as presently enacted to be?

Mr. EIDSNESS. Please excuse the pause, Senator; that is a good question and I am sure I should have been better prepared for that one, but I am having difficulty answering it because I cannot see a great single weakness. Perhaps if there is a weakness and it is one not fully tested, it is the question of what is intended, what is meant by the current language of the act that forms the basis upon which we establish standards and what is meant also by the alternatives.

Senator GORTON. Let us just take the three or four specific recommendations you made for change and understanding that they do not go to the basic elements of the act, how would you prioritize the importance of those recommendations?

Mr. EIDSNESS. I would say, Senator, that of the four changes that we currently believe ought to be given careful consideration, a modification of the statute which would provide some discretion for the Administrator or some other construct under which the Administrator would operate to implement the public notification provision of the Safe Drinking Water Act. This could be done either by providing broad discretion whereby the Administrator would promulgate that under certain types of modifications made, or could be done by specific changes in the act itself.

But I think what is now in the act is too onerous, it dilutes the impact of the requirements, and I think a change is appropriate.

Senator GORTON. Without asking you to state an individual point of view in an ongoing agency battle, can you tell me whether or not there is some difference of opinion and who would have commented on it to this point about what the fundamental and basic standards should be and whether or not it should be changed?

Mr. EIDSNESS. Well, certainly there are differences of opinion concerning whether or not it should be changed and how, but Senator, as we analyze this question, I would like to separate the issue of the basis of standard setting into two pieces for clarification purposes. One is under the current construct where the Administrator would set a contaminant level which may have any adverse effect on the health of persons, whether because of the rather open ended nature of that term we would be—the Agency would be in a position of having to put on its list of contaminants to go through rulemaking progress to limit anything that is basically detected. The other issue, of course is the question of what guidance are we being given or are we to follow when the Agency adopts a standard? I think that it would be most helpful as this committee continues its deliberations to, on one hand, try to provide some guidance for us on whether you intend under the current construct of the law that we be required to basically go through rulemaking on contaminants which we detect because they may have an adverse effect, to the other end of the spectrum which perhaps could be characterized as establishing a limitation which is sort of a threshold beyond which we would want to shut down the water supply system.

But whatever approach is taken, and assuming one might be taken, I would hope that the committee would provide some definition of what you mean, whether it be a reasonable risk, acceptable risk, or where we are now.

Senator GORTON. We have had several witnesses in previous hearings that criticized the Agency for poor implementation of the act, specifically in regard to setting standards for synthetic organic contaminants.

In fact such contaminants or some of them do present an adverse effect to public health. Can you explain the slowness of the Agency in promulgating any standards for these contaminants?

Mr. EIDSNESS. Yes, I will certainly try to, Senator.

If I could paraphrase a comment made by the National Academy of Science in the preamble to their report to the EPA concerning maximum contaminant levels, the Academy said our ability to detect contaminants, or "impurities" is the word they used, far outstrips our ability to understand the toxicological effects. I agree with that statement.

The question of human health effects is a challenge to even the most experienced toxicologist. It takes time and deliberations.

Fortunately we have seen a surge of research and new technologies and analytical techniques to give us better information than we have had in decades on which to base regulatory decisions. As you are well aware, the Agency has published an advanced notice of proposed rulemaking to pose the question should we be regulating certain volatile chemicals, and under what basis; and in that notice we disclosed the research and information that we had available so that it would be readily reviewed by the regulated community, by other research institutions and other parties, and we hope through that process we will have a better basis to make a decision about regulating organic chemicals, but we are moving ahead as fast as we can on that issue.

Senator GORTON. On another subject to which you have referred only indirectly in your testimony, the one we started out this hearing on, ground water contamination, what do you think the proper role for the Federal Government is in the area of ground water protection?

Mr. EIDSNESS. I think first and foremost, an appropriate role and responsibility of the Federal Government and particularly the Environmental Protection Agency is to exercise the rather broad powers that EPA has under various statutes, including the Clean Water Act, the Resource Conservation and Recovery Act, and Superfund, to control and contain pollutants that otherwise might enter and contaminate water resources.

Also, I think an appropriate role is technical assistance to State and local governments, research and assisting in a problem definition statement which we have not completed yet.

Senator GORTON. Which is scheduled——

Mr. EIDSNESS. We have currently completed a study of 1,000 sample locations to try to get better factual data in the field. We are assessing that data now and hope to prepare a report to provide this committee in the near future and we are contemplating expanding that in the coming fiscal year.

I think probably the question of determining the extent of the problem is never-ending, and we will always probably want to continue with the States to determine where and under what conditions we are finding contaminants in ground water.

Senator GORTON. Thank you.

Now, one very basic question which I would like your answer to be extremely careful. S. 1866 proposes to change the health basis for the standard from any adverse effect to unreasonable risk. Do you know if the Council would prefer that to read "unacceptable risk"? In your professional judgment, would either of these proposed changes change the preventive nature of the Safe Drinking Water Act by requiring harm to be documented before the Agency could take action or set standards?

Mr. EIDSNESS. Senator, that may well be a good question to pose to a good lawyer. But as a good engineer, I am not sure I can answer it. But what I can say is that under any of the three alternatives that I have seen, the current requirements and the two proposed, one by the Council and one in S. 1866, that the process of the Agency would use in considerations, that we would take into account would be, I believe, the same, or similar.

Now whether that would result in fact in a different level concerning the standard, I cannot answer to that.

Senator GORTON. That is an interesting answer, but I am not sure that it is acceptable from the point of view of our consideration of the bill, and as a consequence, I would like you to take that question back with you and submit to us the formal opinion of the Agency on the subject.

Mr. EIDSNESS. Senator, I will do that.

Senator GORTON. So that our decision can be an informed decision, and so that it can help us in creating any legislative history for any change we might make.

Mr. EIDSNESS. Well, I welcome that and the opportunity to do that, and we will respond, Senator.

Senator GORTON. The administration has justified its reduction in resources for research and development activities partly on the basis of encouraging private sector participation. Can you tell me what the Agency is doing to cooperate with or encourage the water treatment industry to develop technology, to address wide areas of synthetic organic chemicals in drinking water?

Mr. EIDSNESS. Senator, I am going to defer this question to Vic Kimm, as I think he can provide more of the details and perhaps, Gordon, if you have anything to add.

Mr. KIMM. The Agency has been working with the industry, particularly the American Water Works Research Foundation, and perhaps one of the first activities we have undertaken is using their auspices to help them with the workshops to review all the technical information on the chemicals that Eric described a few minutes ago.

In addition to that, we are receiving applications on a variety of specialized projects which will be future activities mostly in technology transfer, trying to facilitate research and to share information between the Agency and the utilities.

We have also used them for some other activities not related so much to the volatile organic problems, but other problems facing the industry.

Senator GORTON. To give you a specific followup on that, after expressing vigorous opposition to the proposed rule for removing trihalomethanes from drinking water, did the industry get any equally effective but less costly methods to remove them?

Mr. KIMM. There are two parts to the question, I think. The first part is the trihalomethanes removal, and the carbon was not ever envisioned as a primary technique. There are a number of technologies used to reduce trihalomethanes, and the industry has tried to choose the most appropriate.

As for the other question of more general control of the whole host of other organic compounds for which carbon is an effective technique. I believe most of the additional work that has been undertaken has in fact been financed by the Agency, although it was conducted by participating——

Mr. ROBECK. There are two aspects to this effort to get non-Federal people involved. One is the manufacture of products, for instance, Rohm & Haas in Philadelphia was very vigorous in trying to develop a resin to remove chloroform in other trihalomethanes. They have recently told us they feel the process is too expensive, they are not too sure of the size of the market, and therefore they have dropped that, but they have developed another product to help remove the organics that help to form the chloroform, and we are working jointly with them in Daytona Beach, Fla.

The other aspect has to do with encouraging the waterworks themselves to investigate various ways of minimizing organics that chlorine reacts with and also chloroform and other trihalomethanes themselves, and these so-called synthetics. We do this through what we call cooperative agreements. These allow the utility to commit some of its funds as well as Federal funds, and it varies from 5 percent for the utility, to as much as 78 percent.

So that right now we have a little under $2 million that EPA is putting into this effort: we are experimenting to see if there are cost-effective processes to allow them to get into compliance more effectively.

Senator GORTON. And finally, now that you are moving to an administrative cost-benefit analysis which could be included in the new bill, can you tell me how this change will increase public water suppliers' support for any standards which might be promulgated after that process has been completed?

Mr. EIDSNESS. I want to be sure I understand the question.

Senator GORTON. In other words, do you think by including a cost-benefit analysis and the process which leads to a regulation, there will be a greater chance those regulations will be accepted rather than resisted?

Mr. EIDSNESS. I think you will have a better regulation, Senator, whether you call it cost benefit or whether you carry out the statute as currently written, because the statute as currently written does not use the term "cost benefit," but it certainly talks about technological and economic and cost feasibility, and those tend to put us in an area of looking at costs and benefits.

Senator GORTON. But what you have done is go to a more formal cost-benefit analysis?

Mr. EIDSNESS. Yes, sir, under the President's Executive order, I believe we have.

Senator GORTON. I would like to thank you for your initial appearance, and we appreciate the help that you have given us, and we hope that you will have more extensive advice for us very promptly.

Mr. EIDSNESS. I hope so too, and I think I will get better as I go along.

Senator GORTON. Thank you again.

Our next witness is Mr. Davis.

STATEMENT OF JASPER DAVIS, DAVIS WATER & WASTE INDUSTRY, ACCOMPANIED BY JOHN SHEER, PRESIDENT, WATER & WASTE WATER EQUIPMENT MANUFACTURERS ASSOCIATION

Mr. DAVIS. Good morning. I am Jasper Davis of Davis Water & Waste Industry. Mr. Harriger was not able to be here. I am accompanied this morning by John Sheer, who is president of WWEMA.

WWEMA is an association of over 160 corporations that develop technology, manufacture, and supply equipment, materials, and services to the water and waste water industry. We appreciate the opportunity to review the provisions of the Safe Water Drinking Act with you.

We believe that future implementation of the act should follow a different course than that pursued over the past several years. We believe that Government should sponsor research and establish health-based water quality standards. The industry should develop the methods of compliance, innovative technology, and required training and educational programs.

Our comments are made in the hopes of redirecting the law to achieve timely, real, and reasonable progress toward improving the quality and availability of water for human consumption.

WWEMA would like to offer or suggest the following changes and additions:

First, the treatment technology. WWEMA believes the decision concerning the type of treatment technology used by a water utility should be left to the expertise of professionals in the water supply field. The knowledge that presently exists can satisfy water treatment needs in the most cost-effective way and will continue to advance the state of the art through innovative technology. Much more can be accomplished by devoting the limited EPA resources toward appropriate water quality standards which will not pose an unreasonable risk to public health.

Second, the maximum contaminant levels which have sound scientific bases should be uniformly applicable to all of the Nation's population. There is no basis for discrimination by establishing different MCL's based upon population, financial resources, or other criteria of a community. There may be certain cases that deserve individual variance. This is better left to the States through utilization of the variance and exemption process.

Third, the National Drinking Water Advisory Council. There is a major bias and definite void in representation on the Council with the absence of a manufacturer. It is an oversight that WWEMA feels must be corrected if the Council is to be truly represented by individuals demonstrating an active interest in the field of water hygiene and public water supply.

Senator GORTON. I would like to interrupt you there. If manufacturers were represented on the Advisory Council, what kind of expertise or what kind of point of view would be added to that Council? How do you think it would operate better?

Mr. DAVIS. The manufacturers have a day-to-day practical knowledge of the technology that is presently available, how to apply it, and how to get the most cost beneficial use of the funds that are going to be used on equipment. And they generally have more expert knowledge of what the equipment will do and how it is to be used than most anyone on the Council except perhaps consulting engineers.

Senator GORTON. Would that argument have force if we accepted your first recommendation and oriented the act toward health standards but let the technology to the experts and the users?

Mr. DAVIS. I think it would still have—I think it would still apply, it would not be as essential as if the regulations begin to specify how the standards would be achieved, it would not be as important, but probably very few groups in the country who have better knowledge really of the quality that can be produced with the equipment and the technology that is available.

Senator GORTON. I am sorry I interrupted you. Please go ahead with your statement.

Mr. DAVIS. I was glad to respond, because that is a primary interest of ours.

The fourth item is that WWEMA believes that EPA should organize a program of continuous monitoring of surface and ground waters. This will provide a reliable data base to intelligently address future problems, priorities, and solutions.

We are simply in the dark until we have more concrete knowledge of the quality and quantity of water that is available in the country.

One oversight directly related to the act, but not recognized, is that the strategic water resource problem of this Nation is not one of scarcity, but rather, it is one of managing our supplies and solving the problems affecting the water supply industry. WWEMA recommends serious consideration of the following steps in starting to solve some of our present and future problems:

It is almost hard to believe, but water is so cheap we keep giving it away, but it is not cheap.

First of all, mandatory water meters on all residences in cities such as New York City and Denver for conservation purposes, referring to the GAO report on water distribution systems, November 24, 1980.

As precious as water is, it is hard to believe we continue to almost throw it away.

Second, encourage a concentrated effort to upgrade the condition of older waste distribution systems in order to reduce unaccounted for water loss—refer to the GAO report on water distribution systems.

And last, establishment of a federal bank for the purpose of loaning money to water utilities for upgrading water systems known as the national water utilities bank bill, H.R. 4366.

WWEMA believes that with the Congress, EPA, and industry working together, we will be able to satisfy the needs of the Nation in the future with improved water quality at a price that is consistent with the benefits.

Thank you, Senator, for letting our views be expressed, and we will be glad to answer any questions you might have.

Senator GORTON. Thank you, Mr. Davis.

You state WWEMA feels EPA should organize a ground and surface program to address future problems. First, could you be a little more specific as to what future problems you feel EPA will encounter and why it should be a Federal or EPA responsibility rather than something which is in the capacity of State and local governments?

Mr. DAVIS. Water flows with no respect to the State line, it is either underground or surface water. It is a problem that is apparently continuing to build on us without recognizing the extent of it at this time. We don't know what injection wells are doing—water being injected to the wells in Illinois might be going to the underground water in Arkansas, and that is the type of situation that certainly could not be handled by the States individually, it needs Federal responsibility.

Senator GORTON. Mr. Davis, I thank you both for coming here and helping us out with our testimony.

Mr. SHEER. Mr. Chairman, let me just say that WWEMA, besides these points here, is very supportive of the American Water Works Association, and the National Association of Water Companies.

Senator GORTON. Thank you.

Our next witness is Grace Singer from Princeton University.

STATEMENT OF GRACE L. SINGER, RESEARCHER, PRINCETON UNIVERSITY

Ms. SINGER. Senator Gorton, thank you for your invitation to testify before this committee.

My name is Grace Singer. I am a researcher at Princeton University's Center for Energy and Environmental Studies. For the past 2 years I have conducted studies on chemical contamination of drinking water including an analysis of Federal water laws and a case study in New Jersey. The New Jersey study included an interview survey of the 21 largest water purveyors in the State to learn of their practices relating to chemical contamination of drinking water.

As a result of this study, I was awarded a grant for 2 months of research in four European countries last fall: West Germany, Holland, Switzerland, and Great Britain. In many ways, the Europeans have been more progressive in dealing with chemical contamination of drinking water and have policies and technologies resisted in our country.

Before commenting on the proposed amendments to the Safe Drinking Water Act, I would like to briefly review some important U.S. statistics and the most relevant of the European findings.

First, the U.S. statistics: There are about 63,000 chemicals in use in the United States; 1,000 new chemicals are introduced each year, and most are untested by the Government.

At least 700 chemicals have been identified in drinking water supplies, and that is believed to be one-tenth of the existing chemical contaminants.

There are 129 "priority pollutants" identified by the U.S. Environmental Protection Agency.

In juxtaposition to all these figures, there are only 16 elements regulated under the Safe Drinking Water Act.

So the United States has standards and regulations for a very limited number of chemicals in drinking water. Other problems are that:

We conduct very infrequent monitoring, at 1- and 3-year intervals, depending upon the chemical and whether it is in surface or ground water. Monitoring for organics in ground water is not mandated at all; however States can regulate this. For example, Connecticut mandates annual ground water tests with annual reports to the legislature for water supplies serving more than 1,000 people.

In addition, we use no control technology at drinking water plants to remove toxics which can pass through ordinary sand filters—technology which is commonly used in Europe.

Against this backdrop, I would like to relate my most important European findings.

First, there have been no major moves to weaken environmental regulation in Europe such as we are witnessing in the United States. They see their measures as protection of public health, not as environmental frills.

Second, many European drinking water treatment plants use control technology, granular activated carbon, to remove toxic organic chemicals.

Third, even with use of control technology, the Europeans conduct more frequent monitoring than we do in the United States. For example, in the Netherlands, monitoring for chemicals is conducted four times a year, and in Zurich, Switzerland, with excellent Alpine water, such tests are conducted monthly.

In addition, a form of continuous monitoring is used in some European drinking water treatment plants. This method, analogous to the coal mine canary, makes use of sensitive fish in the incoming raw water. If an accidental or illegal toxic spill were to affect the water, this would affect the forward movement of the fish. It would fall back from its usual forward movement and set off electric sensors which would light up the control panel in the treatment plant and alert the operators to test the incoming water. The fish need not die, but merely be unwell, to give off this alert. This is an inexpensive procedure which could be used in treatment plants in the United States. It addresses the problem of the sudden poisoning of water. Currently, instruments do not perform such continuous monitoring.

Fourth, ground water protection is moving forward in Europe, while in the United States, EPA's ground water protection strategy proposed in 1980 is stalled. The Europeans have: (*a*) protection zones for potable ground water aquifers; (*b*) less landfilling of hazardous waste, that is, 39 percent of hazardous waste is landfilled in Holland, whereas 90 percent in the United States; and (*c*) tighter land use laws generally, with less urban sprawl.

Two findings in the last decade on both sides of the Atlantic have had different responses. These are: First, synthetic organic chemicals in drinking water, especially ground water, with use of control technology in Europe, none here; and second, trihalomethanes discovered in 1974. These are the unwanted byproducts of chlorination. At least one THM, chloroform, is a known carcinogen, with others, suspect. Europeans use much less chlorine for disinfection and rely more on ozone which does not form THM's.

As a result, the THM standards are much more stringent in Europe than they are here. The U.S. standard is 100 parts per billion. The European Economic Community proposed standard is 1 part per billion, and in Germany and Switzerland the current standard is 25 parts per billion.

Thus, Europeans are moving forward. We are in a holding pattern and may be regressing with weakening amendments now proposed at the Federal level for both the Safe Drinking Water Act and the Clean Water Act, and with Federal cutbacks at a time when the States must do more.

Following are comments on proposed changes to the Safe Drinking Water Act:

FIRST—PREVENTIVE APPROACH OF THE SAFE DRINKING WATER ACT

Many toxic chemicals in drinking water remain unidentified and maximum contaminant levels exist for only a very limited number of toxics, compared to the more than 700 chemicals identified in water supplies and EPA's list of 129 priority pollutants. Because the long-term health effects for many of these contaminants remain uncertain, it is essential that the preventive mandate of the act be retained. This is embodied in the language authorizing the Administrator to regulate "contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons * * * taking costs into consideration." Even with a suspected risk, the Administrator must consider costs and implementation of this feature cannot be taken lightly. It certainly has not been much used since the inception of the act in 1974.

SECOND—TREATMENT TECHNOLOGY

On my recent research trip to Europe, I learned that treatment technology to remove chemical contaminants is feasible and effective in improving drinking water quality. The Europeans have decided on a preventive approach for public health protection and have used granular activated carbon for the past 10 to 20 years. The cost of all water treatment in Europe, including granular activated carbon and more sophisticated disinfection with ozone, is only 10 to 20 percent of delivered water, with the remaining costs for distribution, administration, and so forth. In my 1981 case study in New Jersey, I found that, based on water purveyor's own estimates, and not those of EPA which are much lower, costs ranged from $16 to $27 annually per household for a 66-million-gallon-a-day treatment plant to a 5-million-gallon-a-day plant, respectively.

THIRD—COST/BENEFIT ANALYSIS

The proposed requirement for a formal cost/benefit analysis under the act would undercut public health protection and the emphasis on prevention. It is very difficult, if not impossible, to compute the benefits to the public without putting a price tag on life or on life with more or less illness. We cannot be certain how much ill health and death are prevented because of the long timelag, which is often decades, between initial contact with carcinogens and the onset of cancer. Yet, the cost of drinking water treatment can easily be quantified and used as the basis for avoiding regulation. Thus, cost/benefit analysis is different in this area of public health protection than it is in other areas with more quantifiable benefits. In addition, a cost/benefit requirement may be redundant since the act already requires the Administrator to consider costs. This is a feature not included in all environmental laws, but it is in the Safe Drinking Water Act.

A cost criterion based on a per capita, or per household unit is a more logical means of computing. This is at the consumer level where such costs are ultimately paid. Given the options and the costs mentioned above, the public would likely be supportive since there is now more widespread concern about drinking water contamination. In addition, recent public opinion polls indicate very strong support for environmental/health regulation. An even more equitable means of meeting these costs would be to charge them to upstream polluters.

FOURTH—SOLE-SOURCE AQUIFERS

Europeans are moving ahead on ground water protection with use of special zones to protect aquifers used for drinking water. This protection is typically in the form of three or four concentric circles where regulation is most restrictive at the center. The outer circles can encompass an entire watershed and there can be restrictions, for example, in the transportation of hazardous wastes of a certain type or volume on the roads in that area. Trucks carrying such wastes must be clearly marked to indicate their load.

It is essential that we protect our aquifer recharge areas in particular, and a major goal should be overall watershed protection in other words, prevention rather than later expensive treatment. The sole source aquifer feature of the act should be a part of a larger ground water protection strategy such as that proposed by EPA in 1980, but currently withdrawn from active consideration.

In summary, it is essential that we offer better public protection than now exists for drinking water. Such protection is being used in Europe, and American citizens should receive no less.

Thank you.

Senator GORTON. Thank you, Ms. Singer.

At the very beginning of your testimony you said you conducted an interview survey of the 21 largest water purveyors in New Jersey to determine their practices as to chemical contamination of drinking water.

What did you learn from that? What steps are these utilities taking to mitigate chemical contamination, and in your view are those steps adequate?

Ms. SINGER. They are doing no more than what the State or Federal law requires, and essentially nothing is being done at all. Control technology, such as GAC, is not being used generally.

There is one community—or actually two—Rockaway Borough and Rockaway, in northern Jersey, a rural/suburban area where no one would suspect there is a ground water problem. They did, in fact, have their municipal systems contaminated with trichloroethylene, and were the first in the State to install GAC. That was just within the last year. They did it because they had no choice; that was their sole-source aquifer, and they had no alternate supply.

So those are the only cases in New Jersey of use of control technology for chemical contamination, and those are not large suppliers, they are small municipal suppliers.

Senator GORTON. So the gist of your testimony is that the response is inadequate?

Ms. SINGER. Yes; there is no response. If the law does not require it, it will not be done. An important fact is that while the capital costs are large when quoted, the per capita or per household cost for control technology is entirely reasonable when you break it down to that level, as indicated in my testimony.

Senator GORTON. Doesn't that nonresponse indicate that there is not a public demand for this kind of activity, or a public conscious of it? Mr. Markwood, who we heard testify before, said that.

Ms. SINGER. No; I don't think that is true at all. What I think is true is that there is a public confusion, particularly in a State like New Jersey, where at least 18 public water supplies have been contaminated, and over 500 private wells have been contaminated. There is tremendous concern now about the issue of drinking water.

I think those people are terribly confused about what can be done and by the fact government has not done more. The feeling of people is that if something could be done, that government would probably be doing it. Not understanding the political process, they are naive, and it is a complex subject. Even scientists don't know for sure what the health effects are. But in Europe they have decided to cut through all of that. Even though they don't have all the definitive information about health effects, they know that these chemicals are toxic, are bad to have in water supplies, and they control them to the extent they can by removing them with granular activated carbon.

Senator GORTON. That is the lesson we should learn from Europe?

Ms. SINGER. I believe that most of the measures discussed in my testimony are feasible. I think we just must have the political will to take some similar measures.

Senator GORTON. With control technology as an alternative why do you think so much of the American water supply industry opposes EPA's treatment technology authority?

Ms. SINGER. Well, it is a very interesting question. One of the things I learned in Europe is that the waterworks have their own research institutions, national institutions, which are very progressive and which work very very closely with the water works, who accept their advice. In this country I think we have developed a kind of adversary relationship, between the waterworks and Government—for example EPA—which is unfortunate, with the same recommendations, and even much less stringent recommendations than are being made in Europe. They are being resisted in the United States partly because of the institutional framework here of Government versus private groups who supply water—although we are a mixture of both Government and private groups which supply here—as opposed to primarily government operation of water supplies in Europe.

But there has been an unfortunate rather defensive stand, I feel, by the American waterworks industry. It is hard to explain it on any other basis.

Senator GORTON. Which of two controls would you think to be more effective: The promulgation of individual standards controlling each individual contaminant, or a specific treatment technology, to control the contamination?

Ms. SINGER. Well, with treatment technology you cut through the needs to promulgate standards for hundreds of chemicals, which can be arbitrary standards, since we cannot be sure what the health effects are.

If we are not going to have control technology, then we need standards quickly for many many chemicals. If the record is any example, it does not happen very quickly, so we have neither at this point.

Senator GORTON. I take it you would prefer the latter?

Ms. SINGER. It just seems that will be more feasible for degraded or highly vulnerable drinking water supplies because it will cut through the problem and the difficulty and slowness in promulgating standards.

Senator GORTON. And finally, in your opinion, what is the correct Federal law on the ground water contamination question?

Ms. SINGER. I think the Federal role can be an important one as witnessed in several countries of Europe. While the detailed regulation can be at the local level, the overall regulation at the Federal level is important. Because localities are unable or unwilling promulgate certain regulations, the Federal standards are important, but the detailed regulation vis-a-vis land use controls to protect ground water, for example, probably is best left at the State and local level.

Senator GORTON. Thank you very much.

Ms. SINGER. Thank you, Senator.

Senator GORTON. Thank you for coming down from your place of work to help us out today.

Our final witness is Donald Boyd, president of the Association of Metropolitan Water Agencies.

STATEMENT OF DONALD BOYD, PRESIDENT, ASSOCIATION OF METROPOLITAN WATER AGENCIES

Mr. Boyd. Thank you for permitting me to be here this morning. I have a prepared written statement and I would like to just briefly summarize that rather than read it.

Senator Gorton. Thank you. Your full statement will be included in the record.

Mr. Boyd. I am Donald Boyd, president of the Association of Metropolitan Water Agencies. I also manage and operate the water and sewer system for the city of Kansas City, Mo.

The Association of Metropolitan Water Agencies was formed about a year ago to serve as a voice for publicly owned water supply agencies in the Nation's larger metropolitan areas. The member agencies total 26, and we serve about 31 million people across the country.

In general, the association supports the goals of the Safe Drinking Water Act. But the Safe Drinking Water Act regulations have made that difficult to achieve, because of specialized treatment requirements.

We believe that the Federal role should be one of providing guidance to the States and to water supply agencies, and that responsibility for setting standards should be at the State level.

We also believe that State and Federal drinking water standards should be not set unless the risk to public health is clearly established. If the Safe Drinking Water Act is to be amended, we believe that the States should be given greater responsibility and should be provided with the financial resources to take care of that task, because they are closer to local municipalities and their financial problems. Certainly standards should not be set in the cases where risk is not clearly established.

Selection of appropriate treatment techniques should be at the discretion of the treatment authority and not something that is mandated by EPA. Oftentimes we can provide a treatment that accomplishes the same thing.

Public notification of violation should be required only for those most serious infractions which occur.

The National Drinking Water Council should include representatives of larger publicly owned agencies, including those that draw their drinking water from the Great Lakes and from the major rivers as well as ground water sources.

With regard to the Sole Source Aquifer Protection Act, our association generally is supportive of the increased protection for ground water supplies.

With that, I will answer any questions you may have and appreciate being able to be here.

Senator Gorton. Can you comment on the question which has been raised on how we should set those basic standards, the unreasonable risks, unacceptable risks, proposals against the present standards?

Mr. Boyd. When this whole thing started, we were concerned of course about the large number of people that travel the entire State, and had to drink from the small wells located along the way. The major cities are generally considered to have top-notch operations, including laboratories, complete treatment processes, and so forth, and the concerns were not directed toward the big cities. But we found that when the regulations came out, they were not aimed at the small supplier, but rather the large agencies which have presumably been supplying good and adequate drinking water for years.

In a big city, less than 1 percent of our water goes for drinking and cooking. We prepare and deliver about 150 gallons a day for every person in the city, and less than 1 gallon of that goes for drinking and cooking.

In a lifetime of 70 years in the city of Kansas City, you would probably drink a teaspoon full of trihalomethanes. And with it not being clearly established as to whether or not that teaspoonful of trihalomethanes will be damaging to you, we should be very careful before we set a standard that requires my city to spend $30 million to put in a granular activated carbon filter.

Senator GORTON. Do you think either standards or controlled technology should be different for a larger than a smaller water supplier?

Mr. BOYD. Well, I think—no, I think if there is clearly risk, certainly that should be considered. But an expenditure of that nature is not looked upon very favorably by local city councils and so forth.

There are really three things that you don't appreciate in the city council. One is, of course, water rates; second is any kind of control of animals, dogs, and cats; and third, any kind of reassessment.

In the densely populated centers of our large cities we have to first contend with many social and economic problems and drinking water quality problems of a questionable nature are necessarily a lower priority item.

Senator GORTON. Finally, one basic question about the structure, and I am not sure I got it from your testimony. Do you think it appropriate for EPA, for the Federal law to set drinking water standards as long as it leaves the control technology to the cities and the individual water companies, or do you think even under those latter circumstances that all EPA should do is provide basic research and allow the city of Kansas City to provide not only controlled technology, but its standard as well?

Mr. BOYD. I have not taken that up with my board of directors, and I think I would like to do that and submit that in writing to you.

Senator GORTON. That is perfectly acceptable, Mr. Boyd.

We very much appreciate your coming here today.

Mr. BOYD. Thank you.

[Mr. Boyd supplied the following response to Senator Gorton's question:]

As I noted in my prepared statement, we have often found that Federally-imposed treatment standards frequently assume an unrealistically high willingness and financial ability on the part of the affected localities to install costly treatment facilities. We believe the States are in a better position than the Federal government to set drinking water standards and compliance schedules. The Federal role should be one of providing guidance to the States and the local water supply agencies. In no case should the Federal government impose requirements for specialized water treatment techniques on local water agencies—that is, in our view, clearly a State and local responsibility. In summary, we believe EPA should provide guidance, States should set the standards, and local agencies should be free to select appropriate treatment technologies to meet those standards.

Senator GORTON. We will adjourn the meeting.

[Whereupon, at 11:55 a.m., the subcommittee was adjourned at the call of the Chair.]

[Statements supplied for the record follow:]

TESTIMONY BEFORE THE SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

BY: IRA M. MARKWOOD
DIVISION MANAGER
DIVISION OF PUBLIC WATER SUPPLIES
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
217/785-8653

THANK YOU, MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE. I APPRECIATE THIS OPPORTUNITY TO TESTIFY ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, STATE OF ILLINOIS, AND THE CONFERENCE OF STATE SANITARY ENGINEERS. I REQUEST THAT THIS STATEMENT BE ACCEPTED INTO THE RECORD OF THIS HEARING.

I AM IRA M. MARKWOOD, MANAGER OF THE DIVISION OF PUBLIC WATER SUPPLIES OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, AND VICE CHAIRMAN OF THE CONFERENCE OF STATE SANITARY ENGINEERS. IN THESE CAPACITIES I AM SPEAKING FOR THE MORE THAN FORTY-FIVE STATES WHICH ARE MEMBERS OF THE CONFERENCE.

I HOLD THE DEGREES OF BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF SCIENCE IN CHEMICAL ENGINEERING. MY EXPERIENCE IN WATER TREATMENT AND SUPPLY GOES BACK TO 1946. I AM A REGISTERED PROFESSIONAL ENGINEER IN ILLINOIS, NEW JERSEY AND NEW YORK, AND I HAVE BEEN WITH THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY SINCE 1972; AS MANAGER OF THE DIVISION OF PUBLIC WATER SUPPLIES SINCE 1974.

The Conference of State Sanitary Engineers is an organization of people in state governments responsible for environmental programs. Its purpose is to promote the public health; to coordinate public health engineering activities of official State and Territorial health organizations; to encourage the interchange of experience among state sanitary engineers in official administrative positions; and to collect and make accessible to all State sanitary engineers in official administrative positions such information and data as might be of assistance to them in the proper fulfillment of their duties. The distribution of safe, clean water was one of the earliest interests of the Conference, and continues to be a major subject of concern.

The Conference of State Sanitary Engineers and its member states are strongly in favor of the Safe Drinking Water Act. However, in its implementation we have found problems which, in our opinion, require correction. The corrections proposed in S1866 will strengthen the Act and help achieve its aim of better drinking water for people.

Section numbers refer to the Sections of S1866 being discussed.

SEC. 2

The proposed Bill would allow appeals from actions of the Administrator to be filed in United States courts of appeals in judicial circuits "in which a substantial portion of the impact or injury associated with the action of the Administrator will occur". This will be in addition to the United States Court of Appeals for the District of Columbia Circuit, which the Safe Drinking Water Act now provides for.

Having only one court available in the United States for this type of appeal inflicts a hardship on a potential appellant directly proportional to his distance from the District of Columbia. First, there is the increased difficulty of conducting the appeal far from the area subject to injury, and second, the logistic problems in having adequate testimony to show the extent and effects of the injury may be overwhelming. This may preclude an effort to correct an unsatisfactory situation, since the enormity of problems in appealing an action of the Administrator only to the District of Columbia Circuit may make a proper presentation of facts impossible.

In any rulemaking procedure where public health is involved, as it is in the provision of drinking water, the more information available and considered, the better the regulation will be. Therefore the provision in S1866 which requires the Administrator to consult with the Secretary of Health and Human Services and the National Drinking Water Advisory Council, and to consider their advice and that submitted by individual council members, is strongly supported.

SEC. 3

S1866 proposes procedural requirements for promulgating rules that would improve the quality of the proposals and insure that the proposed rules are necessary and desirable. The need for new regulations will have to be demonstrated, along with the facts and reasoning supporting the proposed regulation. This will make poor regulations easier to overturn in the courts. The very fact that the courts could overturn a

REGULATION MORE EASILY WOULD REQUIRE THE USEPA TO PROVIDE A STRONGER BASIS FOR ITS REGULATORY DECISIONS (FOR EXAMPLE, IN THE STATEMENT OF BASIS AND PURPOSE) SO THAT THE RECORD OF DECISION MAKING WOULD BE BETTER ABLE TO WITHSTAND LEGAL ACTION. THIS, IN TURN, WOULD MINIMIZE THE PROBABILITY OF APPEALS, AND AT THE SAME TIME WOULD GENERATE MORE SUPPORT FROM THE PUBLICS AFFECTED. THE OVERALL EFFECT, THEREFORE, WOULD BE TO PRESENT PROPOSED REGULATIONS WHICH HAVE STRONGER SUPPORTING EVIDENCE. THESE PROPOSALS ARE MORE LIKELY TO BE ACCEPTABLE TO THOSE CONCERNED.

A REQUIREMENT FOR BENEFIT/COST ANALYSIS ALSO SHOULD BE INCORPORATED INTO THE ACT. BENEFIT/COST ANALYSIS INCLUDES ECONOMIC EFFECTS, BUT DOES NOT EXCLUDE HEALTH OR INTANGIBLE EFFECTS. IT IS EXTREMELY IMPORTANT THAT THIS INFORMATION BE PRESENTED AS PART OF THE PROCESS OF PROMULGATION OF REGULATIONS, PARTICULARLY SINCE IT IS NOW PART OF THE INTERNAL PROCEDURES OF EPA, AND WILL ONLY FORMALIZE THAT PROCESS WITHOUT ADDING ANY BURDEN TO EPA. HOWEVER, COST ESTIMATES MUST BE BASED ON COST TO THOSE SYSTEMS INVOLVED, AND MUST NOT BE AN OVERALL AVERAGE. THEY SHOULD BE AS REALISTIC AS POSSIBLE. PAST EXPERIENCE HAS SHOWN THAT A SUPERFICIAL STUDY ALWAYS SEEMS TO RESULT IN TOO LOW AN ESTIMATE OF IMPACT.

THE PROPOSAL FOR REVISION OF THOSE PARTS OF THE ACT RELATING TO STANDARDS FOR PROMULGATION OF DRINKING WATER REGULATIONS IS STRONGLY SUPPORTED, SINCE THERE IS A POSSIBILITY OF ADVERSE EFFECTS FROM ALMOST ANY SUBSTANCE, INCLUDING WATER ITSELF, IF LARGE ENOUGH QUANTITIES ARE INGESTED. HOWEVER, MANY OF THESE SUBSTANCES, INCLUDING FLUORIDE, SELENIUM, CALCIUM AND MAGNESIUM ARE NEEDED IN MINIMAL QUANTITIES IN ORDER TO MAINTAIN THE HEALTH OF THE INDIVIDUAL. FURTHERMORE, WHEN A SUBSTANCE

IS REMOVED OR REDUCED BEYOND THE POINT WHERE IT WILL NOT POSE AN UNREASONABLE RISK, THE COST OF WATER GOES UP, POSING A HARDSHIP TO THE WATER CONSUMER AND TENDING TO DRIVE HIM TO OTHER LESS SAFE WATER SOURCES, SUCH AS PRIVATE WELLS, WHICH ARE GENERALLY UNMONITORED. THEREFORE THERE MUST BE AUTHORITY FOR AN ADEQUATELY DOCUMENTED REGULATORY DECISION BASED ON THE REASONABLENESS OF THE RISK INVOLVED, TAKING COST AND BENEFIT INTO CONSIDERATION, AS DESCRIBED ABOVE. THERE IS NO ENTIRELY RISK-FREE ENVIRONMENT. CONSEQUENTLY THE DECISIONS MUST BE BASED ON THE MAGNITUDE OF THE RISK, AND NOT THE FACT THAT THERE IS A RISK.

S1866 PROPOSES TO REMOVE AUTHORITY FOR SPECIFYING OPERATION AND MAINTENANCE STANDARDS. THE GREAT VARIATIONS IN SITE-SPECIFIC PROBLEMS AND EQUIPMENT ACROSS THE COUNTRY WILL REQUIRE THAT ANY REGULATIONS ISSUED AT A NATIONAL LEVEL BE SO VAGUE AND GENERAL THAT THEY WILL BE USELESS. IT WOULD BE BETTER TO LEAVE THESE STANDARDS TO THE STATES, WITH GUIDANCE AND ASSISTANCE AVAILABLE FROM THE USEPA. MOST STATES NOW HAVE SUCH REGULATIONS, AND SHOULD CONTINUE TO CARRY OUT THIS PART OF THE DRINKING WATER PROGRAM. THE "RECOMMENDED STANDARDS FOR WATER WORKS" (COMMONLY KNOWN AS "THE TEN STATES STANDARDS"), ISSUED BY THE GREAT LAKES — UPPER MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS, IS THE BASIS FOR, OR IS USED AT LEAST IN PART BY, ALMOST ALL OF THE STATES, AS WELL AS MANY FOREIGN COUNTRIES. ANY MANDATORY FEDERAL PROGRAM FOR THIS PURPOSE WOULD BE REDUNDANT AND LESS FLEXIBLE, RESULTING IN UNNECESSARY EXPENSE, AND A TENDENCY TO FREEZE TECHNOLOGY.

SEC. 4

THE PROPOSED CHANGES IN THE ACT INCLUDE REMOVAL OF AUTHORITY FOR SPECIFYING TREATMENT TECHNOLOGY. WHILE IT IS TRUE THAT AT TIMES A TREATMENT TECHNOLOGY SHOULD BE PRESCRIBED, THESE OCCASIONS HAVE BEEN VERY FEW. THERE ARE GOOD REASONS FOR THIS. FIRST, THE ENGINEER STUDYING A SPECIFIC SITE AND KNOWING THE GENERAL ECONOMIC CONDITION OF HIS CLIENT IS GENERALLY IN A MUCH BETTER POSITION TO CHOOSE THE BEST TREATMENT TECHNIQUE THAN ANYONE AT ANY REGULATORY LEVEL. SECOND, SPECIFYING A TREATMENT TECHNIQUE TENDS TO REDUCE INTEREST IN DEVELOPING NEW TECHNOLOGY, BECAUSE OF THE PROBLEMS WHICH ARISE IN GETTING THE NEW TECHNOLOGY ACCEPTED. USUALLY, THE NEW TECHNOLOGY IS PREFERRED BECAUSE IT IS EITHER BETTER OR CHEAPER THAN THE OLD TECHNOLOGY. HOWEVER, IF THE COSTS ARE HIGH TO OBTAIN APPROVAL, TO DELAY UNTIL APPROVAL IS OBTAINED, OR IF APPROVAL IS NOT GRANTED, IT WOULD BE ECONOMICALLY UNWISE OR UNSOUND FOR AN ENGINEER TO ATTEMPT TO REPLACE A PRESCRIBED TREATMENT TECHNOLOGY. WHERE A TREATMENT TECHNOLOGY MUST BE PRESCRIBED, THE LOWEST LEVEL OF REGULATORY AGENCY CAPABLE OF DOING THIS IS GENERALLY THE BEST, SINCE IT IS CLOSEST TO THE SUPPLY AND, THEREFORE, MORE COGNIZANT OF THE SPECIFIC NEEDS AND ABILITIES OF THE SUPPLY. THEREFORE, IT IS RECOMMENDED THAT THE EXISTING LANGUAGE ON TREATMENT TECHNOLOGIES BE REMOVED FROM THE SAFE DRINKING WATER ACT, WITH SUBSTITUTION OF A STATEMENT THAT THE STATE MAY PRESCRIBE A TREATMENT TECHNOLOGY WHERE APPLIABLE, WITH ADVICE AND GUIDANCE (NOT MANDATORY) FROM USEPA.

SEC. 5 AND 6

WHILE THERE SHOULD BE A LIMIT FOR THE TIME ALLOWED TO A PRIMACY STATE TO ADOPT A NEW REGULATION OR LOSE PRIMACY, SOME FLEXIBILITY MUST BE AVAILABLE. WHERE STATE LEGISLATURES MUST APPROVE REGULATIONS, THE PROCESS IS USUALLY TIME-CONSUMING, AND BECOMES MUCH MORE SO IF THE LEGISLATURE MEETS ONLY EVERY SECOND YEAR. FURTHERMORE, WHEN A NEW FEDERAL REGULATION IS APPEALED, ADOPTION OF STATE REGULATIONS WOULD BEST BE DELAYED UNTIL THE RESULT OF THE APPEAL HAS BEEN DETERMINED. IF THE EFFECTIVE DATE OF THE FEDERAL REGULATION HAS NOT BEEN STAYED, THE STATE CAN CARRY OUT ENFORCEMENT UNDER THE FEDERAL REGULATION UNTIL THE NEED FOR AND CONTENT OF STATE REGULATIONS HAVE BEEN CLARIFIED. THEREFORE THE ACT SHOULD REQUIRE THE USEPA TO SET AT THE TIME OF PROMULGATION, A DATE, NOT LESS THAN 15 MONTHS NOR MORE THAN 36 MONTHS FROM THE DATE OF PROMULGATION, BY WHICH STATE REGULATIONS MUST BE IN EFFECT, EXCEPT THAT THIS TIME CLOCK SHOULD NOT START UNTIL APPEALS TO THE REGULATION HAVE BEEN CONCLUDED. THIS SAME FLEXIBILITY MUST BE AVAILABLE FOR ELIGIBILITY FOR STATE GRANTS.

SEC. 7

THE DISTRIBUTION OF MEMBERSHIP MANDATED BY S1866 WILL BE ADVANTAGEOUS. THIS WOULD GIVE THE COUNCIL THE OPPORTUNITY TO HAVE INPUT FROM THE SCIENTIFIC COMMUNITY, THE REGULATORY AGENCIES, THE PEOPLE BEING REGULATED, AND THE GENERAL PUBLIC. IN THIS WAY THERE WOULD BE REPRESENTATIVES OF ALL INTERESTED PARTIES, PLUS SOURCES OF SCIENTIFIC KNOWLEDGE WHICH COULD BE USED APPROPRIATELY DURING THE DISCUSSIONS OF THE COUNCIL. IT IS RECOMMENDED THAT THIS CHANGE BE ADOPTED.

The third membership category, "appropriate State and local agencies concerned with water hygiene and public water supply", should have the word "regulatory" inserted between the words "local" and "agencies", so that persons engaged in managing governmentally operated public water supplies will not be included in this category.

In order to get as broad a base of nominees as possible, it would be advisable to publish notices of vacancies in the Federal Register. The Administrator should consider all nominees, including those provided by the National Academy of Science and national organizations representing State and local agencies and suppliers of water. A simple statement to that effect will be preferable to the specific mention made in the Bill.

The Council has built up in the past an excellent record and has a continuity which should not be interrupted. Therefore terminating the term of office for all current members would not be wise. Within three years after the passage of a bill affecting the Council, the terms of all then-existing members will have expired, so that continuity could be maintained while a change-over occurs. This part of the Bill should be deleted.

It is recommended that a member whose job change means a change in category, or who retires, have his term expire at the end of the current year (rather than immediately) but that he will be eligible for re-appointment as a member in his new category.

The inclusion of paragraphs (d) and (e) of the Amendments to Section 1446 as proposed in S.1866 is not advisable. While there may be some advantage to including this in the Bill, it is better to do this by rule or guidance. Such a rule (or guidance) will be helpful in having a Council which can present minority positions, and which will be self-governing.

Sec. 8

The process set up in the original Safe Drinking Water Act expected the Interim Regulations to be superseded at an early date by Revised Regulations. Congress recognized that, in the process of determining MCL values, there might be a need shown to amend the Interim Regulations before the Revised Regulations were promulgated. Due to the time lapse this program is no longer relevant; therefore there should be Revised Regulations in the future, and not amended Interim Regulations. Revised Regulations can be amended, as the need arises. Section 8 of S1866, removing authority to amend Interim Primary Drinking Water Regulations, is supported.

The Conference of State Sanitary Engineers suggests that other aspects of the Safe Drinking Water Act also be studied, and improved as the study results indicate. Our recommendations are as follows.

PUBLIC NOTIFICATION OF VIOLATIONS

Section 1414(c) sets requirements for public notice. Before discussing any proposed changes to the Public Notification Requirements of the Safe Drinking Water Act, it would be desirable to look at the intent of Congress.

In the House report on the Act, this requirement is explained as follows:

"The purpose of this Notice Requirement is to educate the public as to the extent to which public water systems serving them are performing inadequately in light of the objectives and requirements of this bill. Such public education is deemed essential by the Committee in order to develop public awareness of the problems facing public water systems, to encourage a willingness to support greater expenditure at all levels of government to assist in solving these problems, and to advise the public of potential or actual health hazards.

In keeping with this purpose, the Committee has specified certain methods and frequencies for giving notice to the public and has conferred authority for the Administrator to prescribe the form and manner of this notice. The regulations of the Administrator must, of course, be reasonable and related to the purpose expressed above. Notice should inform the public, not unduly alarm it. Thus, the Committee expects that the Administrator's regulations would permit public water systems to give fair explanation of the significance or seriousness for the public health of any violations, failure, exemption or variance. These regulations should also permit fair explanation of steps taken by the system to correct any problems.

On the other hand, the Administrator's regulations should assure that unduly technical language, small print, or other methods that would hinder public awareness are not used. Moreover, it might be necessary to require bi-lingual notice in certain communities to assure that adequate

NOTICE IS GIVEN TO ALL SEGMENTS OF THE PUBLIC. THE ADMINISTRATOR'S REGULATIONS SHOULD ALSO REQUIRE THAT THE THREE-MONTH NOTICE INCLUDE ALL VIOLATIONS NOT PREVIOUSLY REPORTED, EVEN THOUGH THEY HAVE BEEN CORRECTED AT THE TIME OF NOTIFICATION.

THE COMMITTEE RECOGNIZES THAT IN SOME INSTANCES APPARENT VIOLATIONS MAY RESULT FROM MONITORING ERROR. ONLY IF THE PUBLIC WATER SYSTEM COULD PROVIDE PERSUASIVE PROOF THAT READINGS IN EXCESS OF REGULATIONS WERE DUE TO SUCH ERROR WOULD THE SYSTEM BE EXCUSED FROM THE NOTICE REQUIREMENTS UNDER SECTION 1414. IN SUCH A CASE, THE COMMITTEE ANTICIPATES THAT THE SYSTEM WILL NOTIFY APPROPRIATE PUBLIC AUTHORITIES OF SUCH MONITORING OR SAMPLING ERRORS.

THE ADMINISTRATOR'S REGULATIONS WOULD BE EXPECTED TO DIFFERENTIATE BETWEEN THE TYPE OF NOTICE WHICH MIGHT BE ORDERED IN CASE OF IMMINENT AND SUBSEQUENT ENDANGERMENT UNDER SECTION 1431 AND THAT WHICH IS REQUIRED IN LESS SERIOUS CASES UNDER THIS SECTION."

AFTER HAVING A FEW YEARS EXPERIENCE WITH THE PUBLIC NOTICE REQUIREMENTS OF THE ACT, WE ARE NOW IN A GOOD POSITION TO REEXAMINE IT AND FINE TUNE IT WHERE AND AS NECESSARY. THE INTENT OF CONGRESS IS LAUDABLE. THE ONLY QUESTIONS WHICH NEED BE STUDIED ARE (1) WHETHER THERE SHOULD BE ADDITIONS OR DELETIONS FROM THE NOTIFICATION REQUIREMENTS AND (2) WHETHER OR NOT THERE SHOULD BE MORE DISCRETION GIVEN TO THE PRIMACY AUTHORITY IN DETERMINING WHEN NOTICE SHOULD BE GIVEN AND THE EXTENT OF THE NOTIFICATION PROCEDURE.

THERE HAVE BEEN PROBLEMS IN A FEW AREAS WITH THE PUBLIC NOTICE REQUIREMENTS. THE INTENT OF CONGRESS IS NOT MET WHEN, FOR EXAMPLE, NOTICE OF A SINGLE CONTAMINATED SAMPLE OUT OF A LARGE NUMBER IS SENT TO THE PUBLIC 90 DAYS AFTER THE EVENT. THERE ARE MANY REASONS WHY A SAMPLE MAY BE CONTAMINATED. SOME OF THESE ARE EXTREMELY TRANSIENT AND EASILY CORRECTED. UNLESS THIS EVENT IS REPETITIVE, IT IS OVERKILL TO HAVE TO GO THROUGH THE NOTIFICATION PROCESS. IN ADDITION, MULTIPLE NOTICES OF INSIGNIFICANT EVENTS WILL TEND TO DRIVE PEOPLE AWAY FROM A SAFE PUBLIC WATER SUPPLY TO BOTTLED WATER WHICH, EVEN IF NOT OF POORER QUALITY THAN THE TAP WATER, IS ABOUT 1,000 TIMES MORE EXPENSIVE. THE PRIMACY AGENCY SHOULD HAVE THE AUTHORITY TO WAIVE PUBLIC NOTICE UNDER THESE CIRCUMSTANCES.

FOR A VERY SMALL SUPPLY, FOR EXAMPLE ONE JUST BARELY LARGE ENOUGH TO BE WITHIN THE REGULATORY FRAMEWORK, THE NEWSPAPER AND RADIO REQUIREMENTS ARE EXPENSIVE, BURDENSOME AND USELESS. IN A SYSTEM THIS SMALL, IF THE WATER USERS ARE NOT ALREADY FAMILIAR WITH THE PROBLEM, A HANDWRITTEN NOTE SHOULD SUFFICE, IF IT IS DELIVERED TO EACH RESIDENCE OR OTHER USER. OF COURSE, A COPY OF THIS NOTICE SHOULD ALSO BE SENT TO THE PRIMACY AGENCY.

TO EFFECT THESE IMPROVMENTS, IT IS RECOMMENDED THAT THE WORDING OF THE ACT BE CHANGED TO BE LESS DESCRIPTIVE OF THE EXACT PROCEDURE FOR NOTIFICATION, WITH GUIDELINES COVERING THOSE PROCEDURES COMING FROM USEPA, AND THAT THE ACT SHOULD ALSO GRANT MORE DISCRETION FOR THE STATE PRIMACY AGENCY TO DETERMINE THE NEED FOR PUBLIC NOTICE (WITHIN LIMITS), AND THE EXACT MECHANICS OF PROVIDING THAT NOTICE. PUBLIC NOTICE IS SERVING A USEFUL FUNCTION AND SHOULD BE CONTINUED WITH THESE CHANGES.

REGULATORY FRAMEWORK AND HEALTH ADVISORIES

THERE IS A NEED FOR MORE FLEXIBILITY AT THE PRIMACY AUTHORITY LEVEL IN APPLYING THE SAFE DRINKING WATER ACT AND SUBORDINATE REGULATIONS MANDATED IN SECTION 1412. ONE OBVIOUS EXAMPLE IS WHEN THE NITRATE MCL, WHICH IS DESIGNED TO PROTECT INFANTS, MUST MANDATORILY BE APPLIED TO A HOME FOR THE AGED. THERE ARE ALSO OTHER SIMILAR PROBLEMS WHERE THE PRIMACY AUTHORITY SHOULD HAVE DISCRETION, SUCH AS THE ACROSS-THE-BOARD APPLICABILITY OF TECHNOLOGY AVAILABLE TO LARGE SUPPLIES, WHICH IS EXHORBITANTLY EXPENSIVE FOR LOW-VOLUME USE BY A SMALL SUPPLY.

UNDER THE PRESENT WORDING OF THE SAFE DRINKING WATER ACT, IF THERE IS EVIDENCE THAT A SUBSTANCE WITH A MAXIMUM CONTAMINANT LEVEL WILL NOT BE FOUND IN THE WATER OF A SPECIFIC PUBLIC WATER SUPPLY, THAT SUPPLY CAN OBTAIN A VARIANCE BY APPLYING FOR IT. HOWEVER, THE SUPPLY MUST THEN CONTINUE AT THREE MONTH INTERVALS WITH A PUBLIC NOTICE PROGRAM. THE ALTERNATIVE TO THIS IS TO CONTINUE TO MONITOR FOR THE SUBSTANCE. IN EITHER CASE, THERE IS AN UNNECESSARY EXPENSE TO THE SUPPLY. THEREFORE, THE PRIMACY AGENCY SHOULD BE ABLE TO MAKE A RULING STATING THAT THE SPECIFIC SUBSTANCE IS NOT PRESENT, AND CONSEQUENTLY THE SUPPLY NEED NOT MONITOR FOR IT ON A NORMAL ROUTINE BASIS. FURTHERMORE, NO PUBLIC NOTICE SHOULD BE REQUIRED UNDER THESE CIRCUMSTANCES. HOWEVER, AT REGULAR INFREQUENT INTERVALS, AS DETERMINED BY THE PRIMACY AUTHORITY, THE SITUATION SHOULD BE REINVESTIGATED TO INSURE THAT THE CONTINUING ABSENCE OF THE SUBSTANCE EXISTS.

IN OTHER WORDS, THERE SHOULD BE A MECHANISM FOR FLEXIBILTY IN APPLYING MCL'S AND MONITORING REQUIREMENTS.

THERE ARE MANY SUBSTANCES WHICH ONLY APPEAR IN WATER SUPPLIES AS THE RESULT OF A SPILL OR OTHER INCIDENT. IN SUCH AN EVENT, IT IS EXTREMELY VALUABLE BOTH FOR THE WATER SUPPLIES AFFECTED AND FOR THE REGULATORY AGENCIES TO HAVE SOME MEANS OF DETERMINING THE ESTIMATED SHORT TERM SAFE LIMITS OF THE SUBSTANCE. THIS SHOULD BE IN THE FORM OF GUIDANCE, AND NOT BE MANDATORY. HOWEVER, THE USEPA SHOULD HAVE THE STATUTORY AUTHORITY TO PROVIDE THIS INFORMATION AND TO OBTAIN THE DATA NECESSARY TO DETERMINE WHAT THE RECOMMENDED LIMITS SHOULD BE. IT MUST BE EMPHASIZED THAT THESE ARE OPINIONS, NOT TO BE USED FOR MORE THAN EMERGENCY APPLICATION. WHERE LONG-TERM HAZARDS EXIST, A MORE CAREFUL AND COMPLETE INVESTIGATION, LEADING TO DEVELOPMENT OF MCL'S, IS NEEDED.

A THREE TIERED APPROACH PROPOSED BY THE EPA IS AN EXCELLENT WAY TO GIVE ADEQUATE CONTROL, BUT ALLOW FLEXIBILITY WHERE NEEDED. THERE SHOULD BE PROVISION FOR THIS IN THE SAFE DRINKING WATER ACT.

THIS PROPOSAL WOULD HAVE NATIONAL ENFORCEABLE MAXIMUM LIMITS FOR THOSE CONTAMINANTS WHICH HAVE NATION-WIDE SIGNIFICANCE. THOSE SUBSTANCES WHICH ARE ONLY LOCALLY APPLICABLE (FOR EXAMPLE, SELENIUM IN A VERY LIMITED AREA) MAY HAVE LIMITS (AND MONITORING REQUIREMENTS) WHERE PRESENT, BUT THESE WILL APPLY ONLY TO THE DESIGNATED AREAS, SO THAT UNNECESSARY EXPENSE FOR MONITORING WILL NOT BE FORCED ON PUBLIC WATER SUPPLIES WHERE IT IS KNOWN THAT THE SUBSTANCE WILL NOT BE FOUND. THE THIRD TIER WILL BE GUIDANCE FOR INVESTIGATION OF THOSE SUBSTANCES WHERE RISK IS MINIMAL OR INFORMATION IS INCOMPLETE. STATES WOULD THEN BE FREE TO SET UP THEIR OWN STATE REGULATIONS, TO BE SUPERSEDED, IF NECESSARY, BY FEDERAL REGULATIONS AT A FUTURE DATE WHEN MORE INFORMATION BECOMES AVAILABLE.

VARIANCES AND EXEMPTIONS

THERE ARE PROBLEMS WITH THE VARIANCE AND EXEMPTION PROVISIONS OF THE ACT. IT PROVIDES THAT MAXIMUM CONTAMINANT LEVELS (MCLS) SHOULD BE THE SAME FOR ALL SYSTEMS, REGARDLESS OF SIZE. YET TREATMENT TECHNOLOGIES TO REDUCE CONTAMINANT LEVELS, WHICH ARE EASILY AFFORDABLE BY LARGER SYSTEMS, MAY BE AN IMPOSSIBLE BURDEN FOR THE SMALLEST SYSTEMS. THIS PROBLEM HAS PLAGUED THE PROGRAM SINCE ITS INCEPTION. ON THE ONE HAND, IT IS UNREALISTIC TO PRETEND THAT ALL OF THESE TINY SYSTEMS WILL BE ABLE TO COME INTO COMPLIANCE. ON THE OTHER HAND, MANY OF THESE SYSTEMS DO HAVE AFFORDABLE SOLUTIONS, SUCH AS DRILLING A NEW WELL OR CONNECTING TO A NEARBY LARGE SYSTEM.

ONE OF THE PROBLEMS WITH THE VARIANCE AND EXEMPTION PROVISION OF THE SAFE DRINKING WATER ACT IS THAT IT DOES NOT ALLOW A CASE-BY-CASE DECISION BY THE PRIMACY AGENCY. CHANGING THE ACT TO ALLOW THIS WOULD OBVIATE, TO A GREAT EXTENT, THE PROBLEMS DESCRIBED ABOVE. GRANTING THIS AUTHORITY WOULD NOT MEAN THAT CONTROL AT THE FEDERAL LEVEL WOULD BE LOST, SINCE THE GENERAL OVERSIGHT AUTHORITY OVER THE PRIMACY AGENCY WOULD STILL INCLUDE THE REASONABLENESS OF THE GRANTING OF VARIANCES. ALSO, IN ORDER TO SIMPLIFY THE PROCEDURES AND REDUCE CONFUSION, THE EXEMPTION FUNCTION SHOULD BE MERGED INTO THE VARIANCE FUNCTION, AND THE NAME "EXEMPTION" BE DROPPED. AT THE TIME OF APPLICATION OF THE WATER SUPPLY FOR A VARIANCE, IT CAN BE DETERMINED WHETHER OR NOT THERE SHOULD BE A DEFINITE COMPLIANCE DATE AND A COMPLIANCE PROGRAM, SUCH AS MIGHT BE REQUIRED IF THERE WERE A FINANCIAL PROBLEM IN MEETING THE RELEVANT REQUIREMENT IMMEDIATELY. FURTHERMORE, SINCE SOME TYPES OF TREATMENT TAKE APPRECIABLE TIME TO

INSTALL, WHILE OTHERS CAN BE INSTALLED QUITE RAPIDLY, ALLOWING THIS FLEXIBILITY WOULD MUCH MORE CLOSELY MATCH THE TIMING AND CAPABILITY OF A GIVEN SUPPLY TO COME INTO COMPLIANCE. WHERE VARIANCES ARE GIVEN BECAUSE THERE IS NO NEED TO COMPLY WITH A REGULATION, SUCH AS MONITORING FOR A SUBSTANCE WHICH HAS NEVER BEEN, AND IS EXPECTED NEVER TO BE, PRESENT, THE VARIANCE SHOULD INCLUDE A PROVISION WHICH SPECIFICALLY STATES THAT PUBLIC NOTICE NEED NOT BE MADE, AS HAS BEEN MENTIONED PREVIOUSLY UNDER "PUBLIC NOTIFICATION."

THE EPA COULD PROVIDE GUIDANCE CONCERNING "GENERALLY AVAILABLE TECHNOLOGIES", BUT, FOR OPTIMUM OPERATION, THE PRIMACY AGENCY SHOULD DETERMINE ITS APPLICABILITY TO ANY SPECIFIC SUPPLY WITH, OF COURSE, OVERSIGHT BY THE USEPA. HOWEVER, IT SHOULD BE NOTED THAT OVERSIGHT MUST BE CONFINED TO GENERAL EXAMINATION OF THE PROGRAM TO MAKE SURE THAT IT IS BEING OPERATED REASONABLY WITHIN THE FEDERAL FRAMEWORK. IT SHOULD NOT MEAN DETAILED POINT-BY-POINT AND DECISION-BY-DECISION EXAMINATION WITH THE OPTION OF OVERRULING THESE STATE DECISIONS AND ACTIONS. THIS CONCEPT IS EXTREMELY IMPORTANT IF THERE IS TO BE MORE FLEXIBILITY IN THE GRANTING OF VARIANCES.

REGULATORY HEARING PROCEDURE

THERE HAS BEEN A PROPOSAL TO ALLOW CROSS-EXAMINATION AT REGULATORY HEARINGS.

THE USE OF THE WORDS "CROSS-EXAMINATION" DOES NOT SEEM TO BE PROPER IN THIS CONTEXT. THE INTENT FOR PUTTING THESE WORDS INTO THE ACT IS TO ALLOW INTERESTED PARTIES WHO ARE NOT MEMBERS OF THE HEARING PANEL TO

QUESTION WITNESSES. THIS IS NEEDED, BECAUSE FREQUENTLY THERE IS EXPERTISE PRESENT WHICH COULD BRING OUT IMPORTANT AND PERTINANT FACTS WHICH OTHERWISE MIGHT REMAIN HIDDEN. IT IS RECOMMENDED, THEREFORE, THAT PROVISION BE MADE FOR QUESTIONING BY THE PUBLIC AT REGULATORY HEARINGS, SUBJECT TO RESTRICTION BY THE ADMINISTRATOR (OR HEARING OFFICER) AS DESCRIBED IN BILL HR4509 WHERE CROSS-EXAMINATION IS DISCUSSED.

GRANT AND LOAN PROVISIONS

REMOVAL OF GRANT AND LOAN PROVISIONS OF THE ACT (SEC. 1444), WHICH COVER GRANTS FOR TRAINING AND OTHER SIMILAR PURPOSES, AS WELL AS A CONSTRUCTION GRANT PROGRAM, HAS BEEN PROPOSED.

SOME GRANT AND LOAN GUARANTEE PROVISIONS IN THE ACT ARE VALUABLE. THE FACT THAT THEY HAVE BEEN RARELY USED SHOULD NOT MEAN THAT THEY SHOULD BE REMOVED. INSTEAD THEY SHOULD BE USED TO A GREATER EXTENT IN THE FUTURE. THERE IS A GREAT NEED FOR TRAINING OF OPERATORS, AND THE PUBLIC WATER SUPPLIES MOST IN NEED OF TRAINED OPERATORS ARE LEAST ABLE TO PAY THE COST OF TRAINING. GRANT AUTHORITY FOR THIS PURPOSE SHOULD BE RETAINED AND IMPLEMENTED.

A CONSTRUCTION GRANT PROGRAM IS COUNTER-PRODUCTIVE, BUT THERE MUST BE A SOURCE OF LOW-INTEREST LOANS FOR THE SMALL WATER SUPPLIES, IF THEY ARE EVER TO BE ABLE TO COMPLY WITH THE DRINKING WATER REGULATIONS. THIS PROGRAM WOULD BEST BE CARRIED OUT BY FMHA, WITH SPECIFIC APPROPRIATIONS FOR SMALL PUBLIC WATER SUPPLIES. IT SHOULD NOT BE ANOTHER EPA PROGRAM. SINCE THE ULTIMATE CONSUMER WILL BE THE REAL BENEFICIARY, THE LOANS SHOULD BE AVAILABLE TO BOTH PUBLICLY AND PRIVATELY OWNED FACILITIES.

AGAIN, I THANK THE SUB-COMMITTEE FOR GIVING THE CONFERENCE OF STATE SANITARY ENGINEERS THIS OPPORTUNITY TO CONTRIBUTE TO THE IMPROVEMENT OF THE SAFE DRINKING WATER ACT. IF THE MEMBERS OF THE COMMITTEE HAVE ANY QUESTIONS CONCERNING THIS TESTIMONY OR THE POSITION OF THE CONFERENCE ON OTHER ASPECTS OF THE SAFE DRINKING WATER ACT, I WILL BE PLEASED TO ANSWER THEM.

STATEMENT OF
FREDERIC A. EIDSNESS, JR.
ASSISTANT ADMINISTRATOR FOR WATER
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENT OVERSIGHT
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U. S. SENATE

May 26, 1982

My name is Frederic A. Eidsness Jr.. I am Assistant Administrator for Water of the Environmental Protection Agency. Accompanying me today is Victor Kimm, Director, Office of Drinking Water. Mr. Chairman, we are pleased to appear today before you and the members of the Committee to discuss the reauthorization of the Safe Drinking Water Act. This is especially important to me as it is my first appearance before a Congressional Committee since my confirmation as a member of this Administration.

Although EPA views the Safe Drinking Water Act as an essential element in the national effort to protect public health, we realize that any Act can be improved, and we appreciate the efforts represented by S. 1866 and other legislation. While S. 1866 raises a number of pertinent issues, we are currently evaluating several provisions of S. 1866 and look forward to working with the Committee in these areas. Since the Act protects the public at the point of potential human exposure, of course, changes should be made with great care and after thorough deliberation, as we know the Committee has always done. In this light, we deeply appreciate the opportunity to discuss these issues with you.

Before I discuss potential changes in the Act, allow me to provide a brief historic perspective on the legislation and its implementation. We are generally pleased with the implementation of this important legislation.

Background

The Safe Drinking Water Act, enacted in December 1974, directed the Administrator of EPA to establish standards to control the quality of the drinking water served by public water systems. The Act envisioned that States would assume implementation responsibilities to ensure that all public water systems conducted periodic monitoring and adhered to uniform national standards.

The legislation also directed the Administrator to institute a program with the States to protect underground sources of drinking water from harmful well injection practices and it provided limited protection to recharge zones of aquifers that were designated as the sole or principal sources of drinking water for a specific area.

In 1975 and 1976, the Agency promulgated the Interim Primary Drinking Water Regulations dealing with the traditional contaminants of concern based on an update of the 1962 Public Health Service Drinking Water Standards. These standards became effective in June 1977 and became the basis for the implementation of the Public Water Supply program called for in the legislation.

With the federal grants available under the Act, most of the States expanded their programs to cover all public water systems serving more than 25 people and adopted regulations that met or exceeded the national requirements and applied for delegations of implementation responsibilities. We are pleased to report that 49 of the 57 States and Territories have accepted primacy.

Following the procedures established in the legislation the National Academy of Science conducted its major study, Drinking Water and Health, which was concluded in 1977. This report reviewed the toxicological literature on more than 50 chemicals which, depending on concentration, could be of concern if present in drinking water.

Meanwhile the Agency began extensive research on the prevalence, sources and control of potential dangerous organic contaminants in drinking water. Almost nothing was known about this problem prior to the enactment of this legislation. This significant scientific challenge to EPA has been a major priority of our drinking water program.

The first regulatory product from this effort was the 1979 promulgation of a standard for a family of organic compounds called trihalomethanes (THMs) which are produced as unwanted by-products of disinfection with chlorine. These chemicals include chloroform which is the carcinogen most frequently found in high concentrations in drinking water.

Initially, EPA also focused on pollution-related organic chemicals in the nation's surface waters used as sources of drinking water. For the most part, such contaminants are not removed with conventional treatment techniques. This led to the 1978 proposal of a treatment standard which would have required the installation of granular activated carbon treatment in large systems on vulnerable surface water sources. There were many problems with the proposal identified in the public comment period and it was subsequently withdrawn.

Beginning in 1979, the Agency increased its attention on organic contamination in drinking water derived from ground water sources. Detected contamination with solvents and other organic contaminants are often in ground water at levels much higher than found in surface waters. This is due to slow lateral motion, little mixing, and limited chemical or biological transformations within aquifers.

These developments led to our most recent regulatory action, the issuance of an Advance Notice of Proposed Rulemaking related to the control of certain volatile organic chemicals most frequently detected in contaminated ground waters. This notice solicits comments on the best way to limit human exposure to these potentially harmful contaminants. It also provides detailed information on occurrence, health effects, treatment techniques and associated costs.

To foster better understanding of what is known about these problems, the Agency is sponsoring a series of four national workshops at which these materials will be carefully reviewed. This will provide scientists, state officials, utility managers, and interested members of the public with a better basis for comment. It will also foster better management of ground water contamination instances as they continue to be detected.

In addition, the Agency is developing an Advance Notice of Proposed Rulemaking dealing primarily with a reassessment of existing regulations. This effort will include a review of all available scientific information on health effects, occurrence, treatment, and associated costs. Much of this information was not available when these contaminants were initially regulated in 1976. This regulatory reassessment is mandated in the legislation.

Compliance

I believe the Agency and States have made excellent progress in the implementation of the public water supply program. Approximately 85% of the 60,000 community water systems in this country are now meeting all chemical and microbiological MCLs. This is up from the 64% rate reported in the 1969 Community Water Supply System Study conducted by the Public Health Service. In addition, over 80% are routinely monitoring for microbiological contamination.

These improvements in meeting MCLs occurred despite the fact that when the program began, 35,000 additional community systems, mostly small ones, were identified after the legislation was enacted. However, there are still challenges ahead for the Public Water Supply program. As the recent GAO report pointed out, numerous violations continue to occur. We have some problems with the way GAO interpreted the violation data maintained by the Agency; for example, many of the violations reflect occasional failures in required bacteriological test samples. However, their report correctly pointed out some performance problems.

More specifically about 10% of the systems violated the maximum contaminant level (MCL) for bacteria at some time in FY 80, of which about one-third were persistent (and hence of greater significance). About 30% of the systems violated the bacteriological monitoring requirements at some time in FY 80, of which about half were persistent. Most of these violations were in very small systems serving fewer than 500 people.

We do not know if there were any cases of actual illness in systems which occasionally violated the MCL. However, the Center for Disease Control reported about 50 outbreaks in 1980 involving 20,000 confirmed cases of waterborne illness. It is generally believed that many more such incidences occur and are not detected or reported. The majority of the reported incidences were caused by contamination in the distribution systems and by treatment deficiencies, such as inadequate filtration and interruptions of disinfection.

As noted by GAO, reaching the very small public water systems has always been difficult. Before the passage of the SDWA in 1974, most States did not require monitoring and compliance with Public Health Service Standards for systems serving as few as 26 people. Now almost all public water supplies are covered and doing some monitoring. Monitoring is one of our best ways of detecting serious bacteriological contamination.

EPA and the States have recognized the special compliance problems of the small systems and worked out procedures for isolating persistent violators for attention and follow-up. Our most recent national data show that between FY80 and FY81, the persistent violation of the bacteriological monitoring requirements and standards were cut in half, from 20% to 10%. We and the States are proud of this accomplishment.

Nevertheless, we are still working with the States to improve this situation. We are helping States to develop compliance strategies which identify the systems with potential major health risks and the steps necessary to bring them into compliance. This effort also includes developing training materials for improved operations and helping States set up or strengthen operator certification programs. The Office of Drinking Water is currently holding two-day meetings in each region with State directors and regional staff to review and renew our joint commitment to full compliance.

The other main program created by the Safe Drinking Water Act, the Underground Injection Control program, has now been implemented. As you know, this is a program designed to protect underground sources of drinking water by the injection of fluids into the subsurface. Such practices include, for example, deep well disposal of hazardous wastes, brine injection associated with oil and gas production, and solution mining of substances like uranium. After significant delay due to the lack of information on injection practices, we completed the regulations for this program in 1980. We also issued guidance to implement Section 1425, a 1980 amendment to the Act, which allows the States more flexibility in obtaining delegation for programs regulating injection practices associated with oil or gas production.

Shortly after promulgation the program regulations were challenged by major affected industries and one State. We were pleased that we were able to settle this case out of court by streamlining reporting requirements and accommodating some unanticipated technical problems faced by the industry without altering the basic integrity of the regulations. This has cleared the way to begin implementation.

Most States, or EPA where the States have not yet assumed primacy, have made substantial progress to complete the work necessary to begin implementation of UIC programs. This has included the inventory of injection activities, mapping aquifers and developing or modifying existing state programs and associated regulations. Since the new program will require permitting of many types of wells, establishing the necessary legal framework is a significant legal task in some States.

We are now reviewing applications for primary enforcement responsibility from States and are pleased at their response. Two States, Texas and Louisiana, have received full primacy, and two States have been partially approved so far. Fifteen applications are under formal review and we are consulting with many other States on draft applications. By the end of the year we expect that about 35 States and Territories will be approved to implement UIC programs. EPA will begin direct implementation where States are unwilling or unable to comply with minimum national requirements as mandated by the Act.

There are many challenges to be faced as this important program becomes fully operational. The next several years will require effort by both EPA and the States to see that this program is successful.

Another activity under the Safe Drinking Water Act is the Sole Source Aquifer program. Under its provisions, anyone may petition the Administrator to designate an aquifer or portions thereof as the sole or principal source of drinking water for that area. This designation ensures that potential ground water impacts of federally assisted projects impacting the recharge zone are assessed as part of the Environmental Impact Statement process. To date, 9 such designations have been made and 16 are pending, largely awaiting technical assessments of the aquifers and delineation of their associated recharge zones by the US Geological Survey. The scope of the legislation is limited; complete protection of critical aquifers and their recharge zones is a primary responsibility of local and state governments.

We recognize this Committee's broader interest in ground water protection. The Drinking Water Program, through the UIC program, standards development and sole source aquifer provisions, has a major role in this area. But there are other Congressionally mandated EPA programs, such as the Resource Conservation and Recovery Act, and Superfund, etc., that have major impacts on ground water quality. In addition, State and local governments also have important roles to play in implementing the national programs and through other activities related to the problems of their specific areas. It is defining these institutional relationships which presents a major challenge.

The Administrator has recognized the need for a unified ground water policy for the Agency. Last year she called upon her key policy advisors to review the Agency,s ground water strategy and recommend a course of action. That review has recently been completed and the Administrator has agreed with the approach presented to her and directed that we develop the details of its implementation.

EPA's new ground water policy will be based on protecting ground water for current and potential future use. The policy acknowledges the lead role of States in this area and concentrates on better and more coordinated use of EPA's existing statutes to support State efforts to protect their ground water resources. Greater emphasis will also be placed on EPA-sponsored research to develop operationally relevant scientific and technical tools with which to better manage instances of ground water contamination as they are detected.

Modifications to the Act

Last fall, in looking ahead to the reauthorization of the Safe Drinking Water Act, the Agency began a process to solicit public comment on how the Act was working and how it might be modified. We were interested in obtaining a broader perspective on the many issues that were raised by the Congress.

In early January, EPA published a notice in the Federal Register calling for comment and scheduling public meetings in San Francisco and Washington, D. C. in early February. EPA also provided an issue paper which identified many of the implementation problems which had been raised in various forums. This issue paper discussed the perceived problems and suggested alternative responses to facilitate discussion and comment. We received about 150 comments through testimony and the mail, summarized them, and provided them to the National Drinking Water Advisory Council and to this Committee. At its March meeting, the Council devoted considerable effort to the assessment of each issue and provided thoughtful recommendations to the Administration which are being given careful consideration by the Agency. In addition, last week, Dr. Robert Neal, Chairman of the National Drinking Water Advisory Council, testified before this Committee on these recommendations.

The Administrator and I have drawn several conclusions from this extensive review. First, and most importantly, the Safe Drinking Water Act provides substantial protection to the public from the harm which may come from contaminated drinking water supplies. Secondly, there are some modifications to the program which may be required, principally to provide greater flexibility to States in the administration of the program to make it more effective without any reduction in public health protection. Some of these changes can be carried out through administrative action which I will describe below. Some may require amendment of the Act.

However, several issues raised in S. 1866 are undergoing continued review, and I am unable to state an Administration position at this time. I will nevertheless address some of the questions, concerns and advantages that we are reviewing that relate to those proposals. In addition, I will offer four suggestions for minor changes to the Act which we would like you to consider and which I believe will improve the efficient implementation of the Act.

Suggested Changes to SDWA

One provision which has presented some persistent problems for water suppliers and States is the requirement that public water suppliers notify customers of all violations of the drinking water standards. This concept of self-enforcement through public notification is sound and definitely should be retained. However, the Act requires notification of all violations, no matter how minor or technical and specifies the methods and frequencies of notification in great detail. This has led both to selective non-compliance and to dilution of notices of significant violation

pub not.

We suggest that the form and the nature of public notification requirements be left to regulatory action by the Administrator after normal opportunities for public review and comment. Those regulations should distinguish notification required for minor or nonrecurring violations from persistent or serious violations. In this way, the public would receive full public notice of failures which could impact their health or where systems persistently refuse to comply with monitoring requirements. The States should have more flexibility in the methods of informing the consuming public, particularly in instances of minor infractions. Also, different approaches may be needed in large and small communities.

The reaction of the public commentors on this approach received by EPA were virtually all favorable. The National Drinking Water Advisory Council also strongly supported this suggestion.

Our second suggestion addresses a technical issue related to the issuance of revised regulations. The Act envisioned that the study conducted by the National Academy of Science (NAS) would identify safe levels as goals which are referred to in the legislation as recommended maximum contaminant levels. These goals are intended as a starting point for the Revised Regulations. While the exhausting deliberations of the NAS provided much useful scientific information, they did not include the specific health goals envisioned in the legislation. To deal with this problem and to allow consideration of all pertinent information, we suggest that the Administrator be permitted to use the NAS studies as well as other information in developing Revised Primary Drinking Water Regulations.

Pri. Regs

The Act also directs that these health goals (RMCLs) for contaminants are to be independent of considerations of feasibility and cost. They are completely distinct from the

RCMLS MCLS

maximum contaminant levels (MCLs) which are enforceable standards which take cost and economic factors into consideration. The Act provides that the RMCL must be proposed and promulgated before proposal of enforceable revised MCLs standards. This would be extremely confusing to the public and could interfere with our goal of an informed public debate as part of the standard-setting process. We suggest that EPA be permitted to propose health goals (RMCL's) and enforceable standard (MCL's) together and to promulgate them together. The National Drinking Water Advisory Council supports this suggestion.

Our third suggestion comes from our experience in operating the program. Currently, EPA's only enforcement authority in the seven non-primacy States and territories where we have direct responsiblities is to bring a recalcitrant system into Federal court. This procedure is so time-consuming and cumbersome that it has been used very sparingly since passage of the Act in 1974. As GAO reports discussed earlier in this testimony indicated, public notification and jaw-boning will lead some water suppliers to comply but others stubbornly refuse. We need an additional mechanism to foster compliance among recalcitrant systems.

Enf.

Operations, such as trailer parks, where the primary business is not water supply, are often not convinced of the need for water monitoring and testing nor do they believe the government will take action against them. Our suggestion would give EPA the authority, in non-primacy States only, to issue administrative orders to non-complying public water systems and to impose small fines. States with primacy now successfully use such administrative provisions as a part of their compliance efforts.

The National Drinking Water Advisory Council supports this idea provided it is limited to use in States where EPA retains jurisdiction.

We seek the support of this Committee in considering these limited, but important suggestions. We believe they will improve our ability to administer this Act effectively.

Administrative Changes

In the course of our public dialogue, a number of issues emerged which we have or can remedy through administrative action. We believe that the Act provides sufficient flexibility to make appropriate changes. I would like to review our plans for addressing several problem areas.

A concern we share with the States is the need to provide greater flexibility in applying monitoring requirements and standards in circumstances where their rigid application makes no sense. Where, for example, naturally occurring contaminants are not found in the water supply, it is unnecessary to monitor as frequently as where they are found. Another example is the limited circumstance where the population to be protected by the standard does not use a particular water supply. For instance, the fluoride standard is designed to protect children so it may not be appropriate to apply to an isolated nursing home. We believe that we have adequate authority to address these problems under the existing legislation and will deal with these legitimate problems in the Revised Primary Drinking Water Regulations. This approach is supported by the National Drinking Water Advisory Council.

We are also taking administrative actions in response to public concerns about the provision of health advice to States and utilities on unregulated contaminants. The Agency has done so under the general advisory provisions of the Act and we and the States believe that it is useful and necessary to continue to do so. We are, however, working to improve this system by asking EPA's Science Advisory Board to review our scientific methods. We will continue to make it clear that these advisories are non-regulatory in nature and should be viewed as discretionary advice for States and utilities to use as they deem appropriate. The National Drinking Water Advisory Council agrees.

Another problem area deals with the question of what to do in those rare circumstances where a system slightly exceeds some standard and is unable to come into compliance. This may be the case for a significant number of very small systems. The existing legislation provides for short-term exemptions and longer term variances to provide legal status for systems truly unable to comply as long as the resulting risk to the public does not constitute an "unreasonable risk to health." Variances are further conditioned in the legislation to the installation of "generally available technology" as determined by the Administrator. We believe that EPA can be sensitive to technical and economic realities in defining "general available technologies" and provide States with an opportunity to review on a case-by-case basis circumstances where technologies may or may not be feasible.

We believe that the statute supports this approach and have applied greater flexibility in our recent proposed settlement of the suit by the American Water Works Association on the THM regulations. In developing Revised Primary Regulations we will explore ways for EPA to define "generally available technology" based on differences in the source water quality, technological feasibility, and cost factors. This will assit the States to better determine whether a variance is appropriate on a case-by-case basis. The National Drinking Water Advisory Council agreed with our general approach to resolving the variance and exemption issue, and also suggested legislative change in this area to more directly provide economic variances and enhanced flexibility to States.

Another area of Congressional interest relates to the National Drinking Water Advisory Council. We agree that there are many competent citizens willing to serve on the Council and have appointed 10 new members since the new Administration took office. The remaining 5 members are up for reappointment at the end of this year.

Currently 6 of the 15 members hold doctoral degrees in some scientific field, including its new Chairman, Dr. Robert Neal. They represent the private sector, State government and academia. We are increasing the representation of State agencies and industry engaged in underground injection, another important program implemented under the Safe Drinking Water Act. The appointments made by this Administration reflect our commitment to a Council which is both technically competent and broadly representative of the groups most concerned about the implementation of the SDWA.

Additional Potential Changes to the Legislation

Let me now discuss several other important potential changes in the legislation which the Administration is actively reviewing but has not yet decided its position.

Although we at EPA have had a chance to review the National Drinking Water Advisory Council's recommendations, several other interested agencies are currently conducting their review. Because the final report was issued in April, I expect this evaluation will be completed in early June and anticipate the Administration to determine its position and notify the Committee soon thereafter. The bills before the Congress would change the basis for setting drinking water standards from "in the judgment of the Administrator, may have an adverse effect on the health of persons" to "poses an unreasonable risk to the health of the persons."

We are evaluating three areas related to this possible change. The first is the degree to which it would add flexibility for EPA in establishing drinking water standards. The second is the possible differences and similarities between the National Drinking Water Advisory Council recommendations that standards be set based on a concept of "unacceptable risk", and this bill which would base it on a concept of "unreasonable risk". The final area being evaluated is our ability to define appropriately an "unreasonable risk" or "unacceptable risk" similar to definitions in other environmental statutes.

No matter what the outcome on the threshold question, EPA is committed to sound scientific evidence prior to rulemaking and full public debate on all aspects of the balancing determinations prior to promulgation of all future standards.

Another major potential change in the law deals with EPA's authority to require use of particular treatment techniques where monitoring for a particular harmful contaminant is not practical.

EPA has not used this authority in the past. In 1978, we did propose the use of granular activated carbon as a treatment technique for large systems vulnerable to contamination with organic chemicals, but it was subsequently withdrawn. EPA does not envision the frequent use of this authority in the future.

Two issues related to this area are being evaluated. One is the potential future need for the authority to prescribe treatment techniques in lieu of MCLs given the rapidly developing scientific methodology upon which MCLs may be based. The second issue is whether the Act now contains sufficient flexibility to permit States to use alternative treatment methods in lieu of those prescribed by the Agency. The National Drinking Water Advisory Council recommendations reflected this latter concern.

Another set of issues under discussion within the Administration deals with the provision within S. 1866 that would require cost benefit analysis of future regulations. EPA now conducts cost benefit analysis on major regulations as a matter of Agency policy and in compliance with Executive Order 12291. This is useful and an appropriate step in the rulemaking process and is consistent with the current Act.

We are currently evaluating the relationship of this provision in S. 1866 to that in S. 1080 and H.R. 746. Of particular importance is the judicial review requirement and its relationship to other regulatory reform provisions, such as the addition of a substantial evidence test. The Administration is currently evaluating whether or not this would be better handled in these generic bills or whether they should be included in enabling statutes. In addition, the flexibility in the current Act is being evaluated to determine if major changes to the law are needed.

Finally, I would like to briefly touch on S. 2131, the Moynihan bill which would provide Federal assistance for local planning to protect recharge areas of sole-source aquifers, followed by Federal assistance for implementation, including the purchase of land. I do not believe that it is appropriate or feasible for the Federal government to become involved in land use decisions which are appropriately functions of local or State government.

We believe that the ground water policy EPA is developing is a feasible approach to enhanced ground water protection. We are accomplishing this through vigorous and consistent implementation of our existing legislation, combined with a creative partnership with the State and local governments which shoulder the primary responsibility for ground water protection. Legislative changes to the SDWA in this area should only be considered after we have considerably more experience in dealing with ground water contamination and better understand the extent of the problem. I draw the Committee's attention to the opposition of the National Drinking Water Advisory Council to this bill.

Conclusion

In conclusion, I believe EPA and the States have made important strides in the protection of public drinking water supplies since the enactment of the SDWA. Clearly more needs to be done, but I believe that the majority of problems can and are being addressed by this Administration under the existing legislation. There are several areas in which we have suggested minor amendments to improve effective implementation but the basic structure of the legislation is sound.

RESPONSES FROM MR. EIDSNESS

ANSWERS TO SENATOR BAUCUS' QUESTIONS

Q. The Agency has indicated that a Task Group has met to review issues relative to ground water protection. What, if any, plans does the Agency have for pursuing a comprehensive protection strategy?

A. A report on this subject is being forwarded to the Subcommittee at Senator Gorton's request as background to a planned future hearing on ground water contamination.

Q. Does the Agency have a policy of not issuing recommended contaminant levels for substances in drinking water until it determines that a "generally available" treatment technology is available to remove them?

A. Under the SDWA in the Revised Primary Drinking Water Regulations, EPA is to set recommended maximum contaminant levels (RMCLs) at levels at which "no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety" (Section 1412). RMCLs are thus non-enforceable health goals. Maximum contaminant levels (MCLs) are to be set "as close to" the RMCL "as is feasible". Feasible is defined as "feasible with the use of the best technology, treatment techniques, and other means, which the Administrator finds are generally available (taking costs into consideration)".

EPA is currently developing Revised Primary Drinking Water Regulations and thus no RMCLs or Revised MCLs have yet been established. [The National Interim Primary Drinking Water Regulations, promulgated in 1975, establish MCLs which included consideration of generally available technnology (GAT).

In the development of MCLs in the Revised Regulations, GAT will be identified and feasibility and costs will be considered in setting the level of the MCL.

Therefore, under the mandate of the SDWA and Agency regulation development procedures, GAT must be identified in the setting of MCLs. However, this does not mean that the Agency policy necessarily would be to wait until technology is developed before setting RMCLs.

RESPONSES FROM MR. EIDSNESS

ANSWERS TO SENATOR BAUCUS' QUESTIONS

Q. The Agency has indicated that a Task Group has met to review issues relative to ground water protection. What, if any, plans does the Agency have for pursuing a comprehensive protection strategy?

A. A report on this subject is being forwarded to the Subcommittee at Senator Gorton's request as background to a planned future hearing on ground water contamination.

Q. Does the Agency have a policy of not issuing recommended contaminant levels for substances in drinking water until it determines that a "generally available" treatment technology is available to remove them?

A. Under the SDWA in the Revised Primary Drinking Water Regulations, EPA is to set recommended maximum contaminant levels (RMCLs) at levels at which "no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety" (Section 1412). RMCLs are thus non-enforceable health goals. Maximum contaminant levels (MCLs) are to be set "as close to" the RMCL "as is feasible". Feasible is defined as "feasible with the use of the best technology, treatment techniques, and other means, which the Administrator finds are generally available (taking costs into consideration)".

EPA is currently developing Revised Primary Drinking Water Regulations and thus no RMCLs or Revised MCLs have yet been established. [The National Interim Primary Drinking Water Regulations, promulgated in 1975, establish MCLs which included consideration of generally available technnology (GAT).

In the development of MCLs in the Revised Regulations, GAT will be identified and feasibility and costs will be considered in setting the level of the MCL.

Therefore, under the mandate of the SDWA and Agency regulation development procedures, GAT must be identified in the setting of MCLs. However, this does not mean that the Agency policy necessarily would be to wait until technology is developed before setting RMCLs.

Q. Has the vigorous opposition to the proposed GAC rule for the removal of trihalomethanes several years ago contributed to the Agency's sluggishness in addressing the presence of synthetic organic chemicals in drinking water?

In the Advance Notice of Proposed Rulemaking for volatile organic chemicals of March 4, 1982, it is stated, "It appears that the most cost-effective method of treating a VOC contaminated water may often be achieved through some combination of aeration and GAC". Would the Agency consider reproposing the use of this treatment technique for the removal of volatile organics if evidence suggests this is the most effective method of control?

A. The proposed GAC rule addressed the occurrence of synthetic organic chemicals (SOCs) in drinking water whereas a separate part of the proposal was an MCL for total trihalomethanes (TTHM). The MCL for TTHM was promulgated in 1979 and the GAC proposal was withdrawn in 1981.

The March 4, 1982, Advance Notice of Proposed Rulemaking (ANPRM) identified aeration and GAC as possible technologies for use in reducing volatile organic chemicals (VOCs) in drinking water coming from ground water supplies. Data show that GAC performs effectively removing VOCs from ground waters. This phenomenon is because ground waters, when contaminated, usually contain one, two or several discrete chemical contaminants with low natural total organic carbon levels.

If it is determined to be appropriate to set standards for VOCs, the regulations would likely include MCLs for individual VOCs rather than a treatment technique requirement. Monitoring for the VOCs is feasible and thus under the SDWA, MCLs should be set rather than using the treatment technique approach. If MCLs are set, GAC and aeration and perhaps others will likely be identified as available technologies for use in meeting the MCLs.

Q. The Advance Notice of Proposed Rulemaking for Volatile Organic Chemicals of March 4, 1982, would suggest that the Agency does not yet have all of the health effects data needed to plan a direct course of action to address their presence in drinking water. What research is being done to provide the type of evidence the Agency must have to take action?

A. The ANPRM was issued with the objective of inviting public comment to determine the best approach to reduce human exposure to VOCs in drinking water. Supporting technical documents on potential health effects of the VOCs were made available for public comment when the ANPRM was published. These draft health criteria documents are an assessment of all available health effects information/data on the VOCs; the questions on health risk, significance of exposure and whether regulatory action should be taken were put forth to solicit public comment on these issues and solicit additional scientific data. Following receipt of comments and any new information, decisions will be made on an appropriate approach.

Of course, the above discussion should not be interpreted to say that sufficient health effects information is available and no additional research is needed. Research studies are continuing into the potential health risks from chemicals in drinking water, some of which include testing of chemicals for carcinogensis by the National Toxicology Program, evaluation of the mutagenic response of some VOCs, and evaluation of pharmacokinetics and non-carcinogenic toxicology.

Q. Were the statutory changes you perceive to be necessary for the Agency to issue Revised Primary Drinking Water Regulations enacted, how much time would be required for the Agency to promulgated them? What changes might be made to the Interim Primary Standards in the process?

A. Most of the Revised Regulations are scheduled for proposal in 1983 with promulgation approximately one year following. A comprehensive reassessment of the National Interim Primary Drinking Water Regulations is currently being conducted as the basis for Revised Regulations. The monitoring and reporting requirements along with current MCLs are being examined. Objectives of the Revised Regulations are to streamline the NIPDWR and minimize the costs of meeting the regulatory requirements while maintaining maximum health protection. Undoubtedly some chemicals will be added and some deleted from those in the NIPDWR. Some MCLs might also change as the result of data obtained since the NIPDWR were promulgated. An ANPRM is currently under development which will discuss potential changes to be included in the Revised Regulations. One of the provisions of the Revised Regulations may be to provide for additional State flexibility in the implementation of some of the requirements. This added State discretion would allow more effective use of resources in meeting drinking water needs on a local or regional basis.

Q. If the Safe Drinking Water Act were amended to give the Administrator greater authority to determine public notification requirements, how would they differ from those set forth in the current Act?

A. Section 1414(c) of the Act establishes public notification requirements in some detail. Notice must be given by the system for any violation of the primary drinking water regulations, the fact that it holds a variance or exemption, and any violation of the conditions of a variance or exemption. Notice must be given at least once every 3 months while the violation or situation exists. It must be published in a newspaper, made available to other media and included with water bills.

We believe that these requirements can be made more flexible without sacrificing the contribution that meaningful public notice makes to the protection of public health.

For example, the Section does not differentiate among different types of violations. Yet, some violations, such as a case of serious microbiological contamination, represent an immediate threat to the health of the users of the water. Such problems should be widely publicized immediately upon discovery. Other violations, such as a tardy report to the State on the results of monitoring, represent a lesser risk to public health. Public notice in such cases could actually serve to confuse the public especially if the subsequent testing demonstrates compliance with applicable standards. The requirements in such cases could be reduced or even dropped.

Another way in which flexibility could be introduced is in selecting notice frequencies more appropriate to the type of violation. Again, during an incident of microbiological contamination the system should be required to keep its customers advised on a continuous basis. On the other hand, there may be little need to advise people every 3 months that the system has been granted a variance or exemption.

The form of giving notice could also be varied according to the type of violation. For example, a notice included in the next water bill after an episode of microbiological contamination serves little purpose except to confuse people who had been informed that the problem was solved. Conversely, immediate notice in the newspaper that the system failed to monitor several months previously may not be the most appropriate way to inform the public.

At the present time, national compliance with public notification requirements is poor. One reason is that the current requirements are not perceived to be appropriate in a number of cases. If the public notification requirements could be tailored and focussed, we believe compliance would improve and the public would be better served and better informed in the long run. The Agency would implement any changes through formal rule-making, which would assure a full public review and comment by all concerned with changes in public notification requirements.

ANSWERS TO SENATOR HART'S QUESTIONS

1. The presence of uranium in drinking water is a persistant problem in several Colorado communities. In a letter from EPA to the Colorado Department of Health in August 1979, it was indicated that the Agency hoped to develop a uranium standard sometime within the following year. As yet, no standard has been issued. What is the status of efforts toward development of a uranium standard?

To develop a standard for uranium in drinking water requires information relating to several areas including: occurrence, contribution from other sources, analytical methodology, health effects, treatment technology and cost. We have much of the information about occurrence, other sources, analytical methodology and radioactivity. We are setting up a cooperative agreement with Oregon State University to provide information on chemical toxicity. We are conducting a pilot plant study and field tests of an anion exchange resin which appears to be a promising treatment technology. Once all the technical information becomes available, we can estimate the cost of monitoring and treatment and consider developing a possible standard.

2. Has the lack of available treatment technology for removing concentrations of uranium from drinking water hampered the development of a maximum contaminant level for this substance?

The lack of a proven treatment technology has hampered the development of a standard. Our pilot plant study and field tests of anion exchange resins are essential components for determining the availability and cost of technology. A proven treatment technology and associated costs are an essential feature in standard setting under the Safe Drinking Water Act.

3. A continuing theme of this Administration has been to encourage maximum private sector participation in research and development activities. To what extent has the water treatment industry been responsive to the need for technology to remove uranium from drinking water supplies.

The mining industry has developed methods for removing uranium from water. Unfortunately, these methods have been developed for concentrations far above those found in drinking water. Thus, we are developing the information needed at the lower environmental concentrations.

The drinking water industry has not been directly active in uranium control technology since there has not been a standard. EPA contracted with Oak Ridge National Laboratory to survey available technologies. Based on their report, EPA is funding field tests.

4. In the absence of both a maximum contaminant level for uranium and adequate treatment technology to measure and remove this substance from drinking water, how does the EPA advise communities to cope with the presence of uranium in drinking water supplies?

Our current advice is based on projected health risk using a rather conservative model. At this time, we recommend alternate water sources be used or that water be mixed with that of a lower concentration if communities are attempting to reduce the uranium in finished water. We have invited interested communities to participate in field tests of the anion exchange resin treatment methods.

5. Does the EPA recognize the danger to public health in communities across the nation because of the failure to set a maximum contaminant level for uranium and encourage development of technology to adequately measure and treat the presence of this substance in drinking water supplies?

Since uranium concentrations can be subtracted from gross alpha particle activity for compliance purposes, the incentive is then for water suppliers to determine the uranium concentration. Many of these supplies that have found gross alpha particle activity in excess of the MCL (15 pCi/l) have determined the uranium concentrations. Those communities with high uranium concentrations that have asked for our advice have been encouraged to find alternate sources or participate in our field tests of the anion exchange resin technology. Using the Oak Ridge National Laboratory data, we estimated that between 200 and 2,000 of the approximately 60,000 public water supplies in the United States have uranium concentrations in excess of 10 pCi/l. No better estimates are available. Lifetime consumption of water with 10 pCi/l of uranium might increase the risk of getting bone cancer or leukemia up to about 3 x 10^{-5} in a lifetime, if the rather conservative linear extrapolation method is used.

We are preparing to conduct a national survey of select radionuclides in drinking water, including additional samples for uranium, and also toxicological studies are being planned that will help to quantify health risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 4 1982

OFFICE OF
POLICY AND RESOURCE MANAGEMENT

Mr. James Davenport
Staff Director
Subcommittee on Toxic Substances
and Environmental Oversight
Committee on Environment and
Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Davenport:

Enclosed herewith are the Environmental Protection Agency's responses to questions for the record of the Subcommittee's May 26, 1982 hearing on reauthorization of the Safe Drinking Water Act. In accordance with Chairman Gorton's request, our responses include a more extensive discussion of S. 2131, the "Sole Source Aquifer Protection Act."

We appreciate the opportunity to provide these answers for the record.

Sincerely yours,

Leland E. Modesitt, Jr.
Director
Office of Legislation

Enclosure

Question:

Is there a more effective way to protect sole source aquifers? If so, would you specify that approach?

Answer:

We believe the Agency has already embarked on an effective approach to the protection of sole source aquifers and ground water in general. One fundamental tenet of this approach is our belief that the States and local governments should retain the primary responsibility for the protection of ground water. The Federal government can help State and local governments carry out this mission in a variety of ways. First, the Federal government can assure that it does not contribute to the contamination of sole source aquifers through existing authorities under the Safe Drinking Water Act. Second, we can improve the focus and coordination of ground water related programs such as underground injection control, hazardous waste management and superfund. The Superfund and RCRA programs will go a long way towards protecting aquifers. We should have an opportunity to allow these programs to work and to analyze the results of our progress before embracing a new Federal subsidy program that has a low probability of being successful. Finally, the Federal government can provide scientific information and other technical assistance to support State and local efforts. EPA is developing a Ground Water Policy which will help to carry out these objectives.

QUESTION:

How effectively will S. 2131, which would provide Federal assistance for local planning, protect the recharge areas of sole source aquifers?

Answer:

It is, of course, difficult to anticipate how effectively proposed legislation may work in the future in a variety of situations across the country. Therefore, the Agency is in no position to speculate about the potential effectiveness of S. 2131 without a great deal of further study. However, we strongly oppose this bill for the following reasons.

First, S. 2131 would add to the existing sole source aquifer designation process new procedures for designating "special protection areas" within sole source areas. As a technical matter, we anticipate some challenges in identifying special protection areas in a manner that will best serve the purpose of protecting ground water. In many cases, surficial aquifers are recharged over virtually their entire areas. In such cases, the entire sole source area could qualify as a special protection area under the criteria set out in Sec. 1426(d)(2). Also, recharge (or a contaminant) entering the aquifer moves through the aquifer in accordance with the particular ground water flow system. Thus, special areas would not necessarily afford protection to ground water "upstream" from the area. Conversely, ground water within a special protection area could still be degraded from unprotected areas "upstream."

Second, the bill establishes a local comprehensive planning mechanism supported by Federal grants. The history of such planning efforts has been uneven at best. For example, the ultimate value of area wide planning under Section 208 of the Clean Water Act is open to question. Planning for comprehensive ground water management will be even more difficult than for surface water since less is known about ground water and there has been less experience in trying to manage it effectively.

The heart of the matter, however, is the extent to which local governments implement comprehensive plans. S. 2131 calls for planning that involves difficult decisions balancing competing economic interests and objectives that are more appropriately funded and carried out by local governments. Even when successful plans have been developed in the past, their implementation has all too often foundered on local realities.

Third, S. 2131 would authorize the Federal government to support (with a 50% match) the implementation of the plan, including the acquisition of land. We are strongly opposed to grants for implementation because we believe that it is inappropriate for the Federal government to fund implementation for activities which benefit only local areas. At present EPA has designated 10 sole source aquifers and another 15 petitions are pending. In some cases, for example the Biscayne Aquifer in Florida or the New Jersey Coastal Plains Aquifer, the designated areas are extensive. To the extent that land acquisition becomes a major means for plan implementation, the potential demand for Federal grants could be staggering. Finally, the acquisition of land by some public body (the bill does not specify who would hold title) does not by itself assure that the ground water within the area would necessarily be protected.

Question:

In your May 26, 1982 testimony before this Subcommittee, you asserted that S. 2131 would lead to Federal government involvement in local and State land-use decisions. How and to what extent will S. 2131 involve the Federal government in land-use decisions?

Answer:

Section (g) of the bill specifies the contents of the comprehensive management plan. The specified elements of the plan include:

- (E) the amount, location and type of human development and activity the ecosystem can sustain;
- (F) proposed limits on Federal, State, and local government assisted activities and projects;
- (G) a comprehensive statement of land use management; and
- (H) proposed limits on land uses in the special protection area.

Once the Governor approves the plan, it is submitted to the Administrator for further approval. Thus, EPA is given the obligation, as the steward of Federal grants, of critiquing detailed plans for human development, activity and land use in local areas across the country.

STATEMENT OF DONALD R. BOYD
PRESIDENT
ASSOCIATION OF METROPOLITAN WATER AGENCIES

before the

SUBCOMMITTEE ON TOXIC SUBSTANCES
AND ENVIRONMENTAL OVERSIGHT
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

May 26, 1982

Mr. Chairman and members of the subcommittee, I am Donald R. Boyd, President of the Association of Metropolitan Water Agencies. I also serve as Director of the Pollution Control and Water Departments for the City of Kansas City, Missouri. I very much appreciate the opportunity to appear before you this morning on behalf of our member agencies.

The Association of Metropolitan Water Agencies was formed in June of 1981 to serve as a voice for publicly-owned water supply agencies in the Nation's larger metropolitan areas. Member agencies of our Association are responsible for providing a safe and adequate supply of drinking water to more than thirty-one million people in twenty-six cities.

The passage of the Safe Drinking Water Act gave the Federal government broad new authority to impose treatment standards upon local water suppliers. The Act has been widely hailed for being a "preventive" piece of legislation rather than one which is oriented towards "clean-up". That characterization is accurate up to a point, but it implies that almost any action taken by EPA under the banner of "prevention" is justifiable, and it ignores the fact that a substantial amount of expensive "clean-up" must be performed by water supply agencies before a given amount of "prevention" is realized.

We support the goals of the Safe Drinking Water Act and its responsible implementation. The publicly-owned water supply agencies in our Nation's big cities have been in the business of protecting the public health for years, and will continue to do what is necessary to provide safe water. I am mystified by those who point fingers at municipal water supply agencies and suggest that we are endangering the public health by registering our concerns about regulation under the Safe Drinking Water Act. The record of compliance by big cities with the Act proves otherwise. Our concerns are limited to proposed rules which would unreasonably require the removal of substances from drinking water which have not been conclusively shown to present a risk to public health. Amendments included in S. 1866 would alleviate our concerns, and our Association supports them.

Under the existing law, Federal regulations increasingly are requiring the treatment of substances whose actual risk has not been clearly determined. Moreover, these regulations are coming at a time when cities are being hard pressed to maintain existing services, let alone take on additional projects of uncertain value. In general, we often find that Federally-imposed treatment standards frequently assume an unrealistically high willingness and financial ability on the part of the affected localities to install costly treatment facilities.

Consequently, we endorse the provision in S. 1866 which would provide for the issuance of regulations only for contaminants "which pose an unreasonable risk to the health of persons". We believe this amendment would correct the defect in the statute as presently written which allows the issuance of regulations even in instances where the need for regulation is in question.

Our members firmly believe that local water supply agencies should be financially self-sufficient through their rate structures. Federal treatment rules requiring substantial capital expenditures to install new and specialized treatment systems will make it difficult or impossible to reach the goal of financial self-sufficiency. With municipal water supply and distribution systems in poor condition and maintenance costs continuing to rise, publicly-owned water supply agencies should not be expected to forego badly needed system improvements in order to meet Federally-imposed standards which may not be necessary.

We would support amendments to the Safe Drinking Water Act which would provide the States with more responsibilities and resources to administer the programs. Specifically, we believe the States are in a better position to set drinking water standards and compliance schedules, with Federal guidance. Our experience shows that State government agencies generally better understand and respond to the needs and priorities of urban water suppliers and the people they serve than Federal agencies.

S. 1866 would delete the current provision allowing EPA to require the use of a specific water treatment technology to remove regulated contaminants. We believe the current provision creates a role which is not appropriate for a Federal agency. Drinking water contaminants should be regulated by setting maximum contaminant levels when possible, not by requiring the use of one treatment method over another. The proper role for the Federal government with regard to treatment technologies is in the area of research and providing guidance to State and local agencies. In those instances where setting an MCL is impossible, State and local agencies should be afforded flexibility in considering alternative treatment technologies, and they should have the benefit of first-rate research from EPA as they do so.

The current public notification requirements in the Act should be changed to distinguish between violations which are minor, infrequent, or procedural, and those which are serious and persistent. The required notification of minor infractions of the regulations is expensive and self-defeating, and should be eliminated.

We would support amendments to the Safe Drinking Water Act which would make the procedures for issuing variances and exemptions under the law more flexible and responsive to local needs. Again, the States should be given increased responsibilities and authority in this area, since they are closer to the problems experienced by local water supply jurisdictions. States should have the flexibility to grant exemptions on a case-by-case basis.

Our Association supports the provision in S. 1866 which would expand the National Drinking Water Advisory Council. We suggest that the Subcommittee consider amending S. 1866 to further provide that, of the Council members representing publicly-owned water supply agencies, half shall be from agencies providing water service to more than 150,000 people. Broader representation on the Council could also be assured by a requirement that all three major water sources in the Nation be represented (Great Lakes, major rivers, and groundwater).

With regard to groundwater protection, we support the concepts contained in S. 2131, the Sole Source Aquifer Protection Act. The protection of aquifer recharge zone from contamination is critical, since clean-up of a groundwater supply is virtually impossible. In addition, the bill provides an appropriate balance in the responsibilities of Federal, State, and local government agencies. Providing the proper degree of protection to our groundwater resources is a critical task and should proceed without further delay.

Mr. Chairman, that concludes my remarks on S. 1866 and S. 2131. I appreciate the opportunity to appear before you today, and I will be glad to answer any questions you may have.

ROBERT LIST
GOVERNOR

[illegible]
[illegible] CHAIRMAN
[illegible] DIRECTOR

[illegible]
[illegible]
[illegible]

COLORADO RIVER COMMISSION
OF NEVADA
TELEPHONE (702) 733-7788

MAILING ADDRESS
P.O. BOX [illegible]
[illegible] NEVADA [illegible]

[illegible]
[illegible]
BUILDING B, [illegible] 402
LAS VEGAS, NEVADA [illegible]

March 23, 1982

Honorable Robert T. Stafford
United States Senate
Chairman, Senate Environment &
Public Works Committee
Dirksen Senate Office Building, Room 5219
Washington, D.C. 20510

Dear Senator Stafford:

The Colorado River Commission of Nevada on March 23, 1982 passed the enclosed Resolution 82-4. This Resolution supports Senate Bill S. 1866 and/or House Bill H.R. 4509 which would amend Public Law 93-523 for the purpose of eliminating the language "may have an adverse effect on the health of persons" from the Safe Drinking Water Act and substituting the phrase "that a contaminant poses an unreasonable health risk" as the take-off point for establishing a standard. Additionally, these amendments would require the United States Environmental Protection Agency (EPA) to perform a cost-benefit analysis on any proposed regulations.

The Safe Drinking Water Act now provides for regulation by EPA when "in the judgment of the Administrator," any contaminant "may have an adverse effect on the health of persons." Additionally, they have stated that the Act presently prohibits them from using cost-benefit analysis in proposing and issuing drinking water regulations. A prime example of this philosophy has been demonstrated by their recent regulations to control organic chemical contaminants in drinking water.

This proposed legislation would also strip EPA of its authority to require certain treatment techniques as part of any water purification process. The American Water Works Association (AWWA), which represents practically all of the water utilities in the United States, has argued that this approach is inappropriate. Further, they have argued that such regulations are unlikely to achieve health goals as efficiently as performance standards which allow flexible and innovative approaches to achieve these goals.

The Commission unanimously supports the provisions included in Senate Bill S. 1866 and/or House Bill H.R. 4509. We would ask for your careful consideration of this matter.

Sincerely,

Jack Lehman

Jack Lehman, Chairman
Colorado River Commission

Enclosure

82-4 RESOLUTION

COLORADO RIVER COMMISSION OF NEVADA

WHEREAS, the resources of the United States, even those to be devoted to the protection of the public health, are inherently limited; and

WHEREAS, if the United States is to achieve the maximum health benefit from these limited resources, before imposing new requirements the government should assess and compare both the benefits and costs of any proposed environmental regulations alongside available alternatives; and

WHEREAS, the Safe Drinking Water Act now provides for regulation by the Environmental Protection Agency when, "in the judgment of the Administrator", any contaminant, "may have an adverse effect on the health of persons"; and

WHEREAS, the Environmental Protection Agency has argued that the Act prohibits the Agency from using cost-benefit analysis in proposing and issuing drinking water regulations; and

WHEREAS, treatment technique requirements imposed by government regulations are unlikely to achieve health goals as efficiently as performance standards which allow flexible and innovative approaches to achieve defined goals; and

WHEREAS, Senator Slade Gorton (Washington) and Congressman Phil Gramm (Texas) have introduced similar legislation in both the Senate (S. 1866) and the House of Representatives (H.R. 4509) which would amend the Safe

Drinking Water Act to require the Environmental Protection Agency to employ cost-benefit analyses and to eliminate the Agency's power to impose treatment technique requirements except as provided for in the Act;

NOW, THEREFORE, BE IT RESOLVED, that the Colorado River Commission of Nevada supports these changes which are incorporated in S. 1866 and/or H.R. 4509 and urges its prompt consideration and enactment; and

BE IT FURTHER RESOLVED, that a copy of this Resolution be sent to Governor Robert List, Senator Howard W. Cannon, Senator Paul Laxalt, Congressman James D. Santini, Senator Robert T. Stafford (Chairman, Senate Environment and Public Works Committee); Congressman John D. Dingell (Chairman, House Energy and Commerce Committee); and Roland D. Westergard (Director, Nevada Department of Conservation and Natural Resources).

Adopted and passed at a regular meeting of the Colorado River Commission of Nevada on March 23, 1982.

JACK LEHMAN, Chairman

city of arvada
8101 RALSTON ROAD
ARVADA, COLORADO 80002
PHONE 303-421-2550

March 19, 1982

Dear Senator:

The Senate Environment and Public Works Committee is scheduled to discuss the Safe Drinking Water Act in the near future. As you know, the Act must be reauthorized this year. We would like to call to your attention the absence of a drinking water standard for uranium. We are taking this opportunity to urge the establishment of a uranium standard and the incorporation of this standard into the Safe Drinking Water Act.

We have put together this packet of information for your consideration. Included in the packet is an executive summary that highlights the uranium issue. The absence of a uranium standard raises a concern among the public over health effects. While we are not scientists, as politicians we realize that cities, or other purveyors of water, will become the focus of this public concern. The establishment of a uranium standard would help to dissipate public concern and restore confidence in government.

Also included in this packet is a map illustrating the extensive uranium resources throughout the country. This map, however, only depicts those areas identified as being feasible for economic recovery of uranium. The extent of uranium resources is therefore greater as it also includes those areas not feasible for economic recovery yet which may effect drinking water.

Previous discussions on the uranium issue have focused on the misunderstanding that it was only a local issue which would be better addressed at the local level. The attached map attempts to correct this misunderstanding by depicting the uranium resources estimated in thirty-five states. Clearly, this is more than a local issue.

We believe that the absence of a drinking water standard for uranium (and radon) causes unnecessary public concern and that cities will become the focus of that concern. This is an issue of national concern and we ask your assistance to include a uranium standard in the Safe Drinking Water Act.

Should you need any further information on this issue, please contact Ron Le Blanc, Assistant to the City Manager, (303) 431-3000. Thank you for your consideration.

Sincerely,

Robert G. Frie
MAYOR

attachments

Executive Summary

The Establishment of a Drinking Water Standard for Uranium

The Safe Drinking Water Act was designed to achieve uniform national standards to insure the safety and quality of drinking water in the U.S. To accomplish this, the Safe Drinking Water Act identified contaminants and established their maximum acceptable levels. However, two contaminants, Uranium and Radon, were omitted from the list. Since the Safe Drinking Water Act is up for review and reconsideration at this time, it would be appropriate to include uranium and radon in the list of contaminants.

The list of contaminants presently includes americium, beryllium, plutonium, thorium, tritium and a host of other highly toxic substances; but not uranium and radon. Alpha radiation is also regulated, based upon health effects. But, the alpha radiation generated by uranium and radon are excluded from the standard.

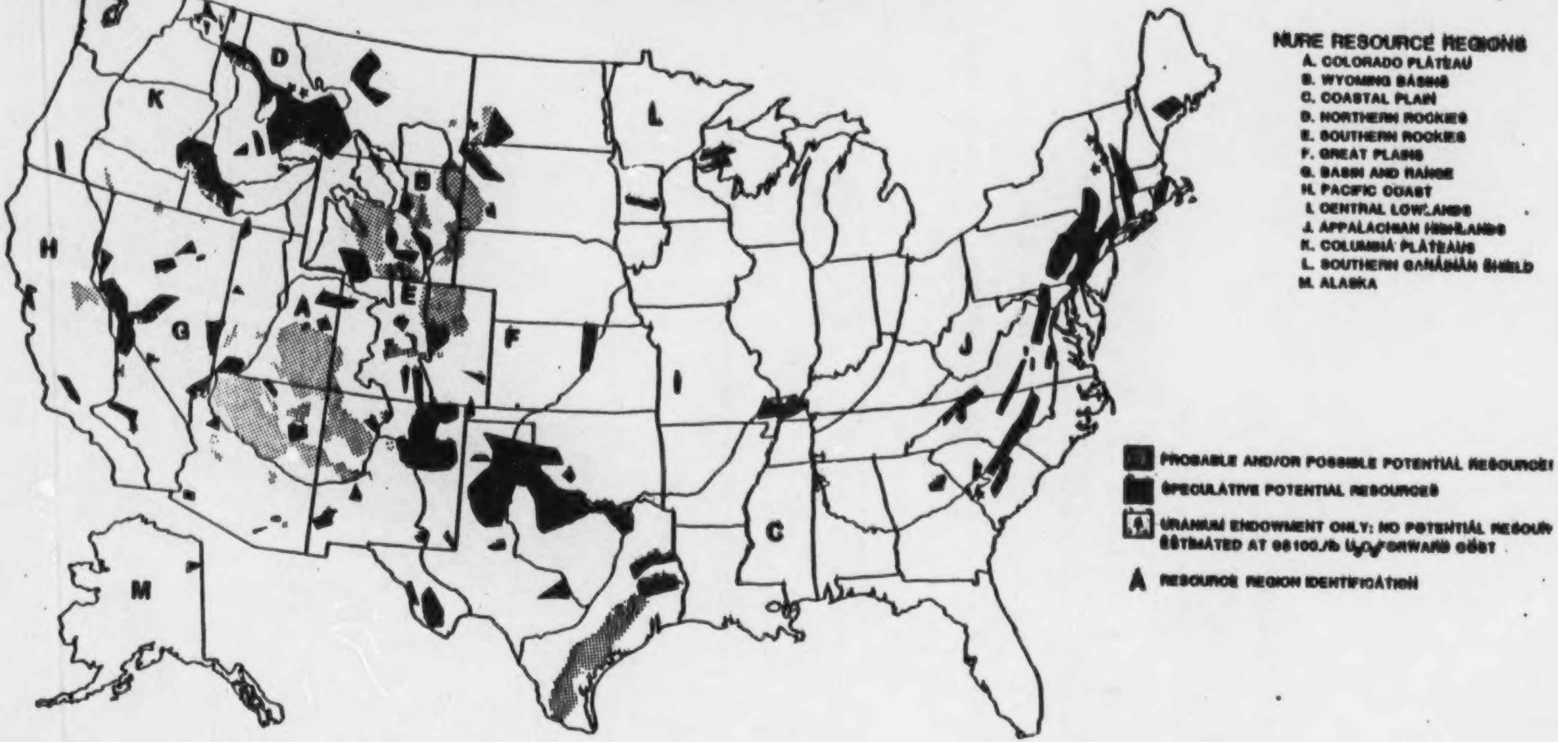
There are instances of elevated uranium levels in municipal drinking water supplies which have caused public concern over health effects. In the absence of a standard, the public is subjected to uncertainty, stress, and anxiety over possible health effects. The establishment of a standard would provide cities, as purveyors of water, with an assurance of public health and safety.

The City of Arvada and the North Table Mountain Water and Sanitation District (NTM) have been subjected to elevated levels of uranium in drinking water. The source of this contamination is the Schwartzwalder Uranium Mine. NTM's potable water contained 418 picocuries/liter on April 27, 1978. This is approximately 28 times greater than the 15 picocurie/liter standard for all alpha radiation emitted from all alpha emitting substances excluding uranium and radon.

Recommendations

1. Establish a reasonable standard for uranium and radon which address the feasibility and efficacy of the solution.
2. Incorporate that standard into the Safe Drinking Water Act.

POTENTIAL URANIUM RESOURCES


NURE RESOURCE REGIONS
A. COLORADO PLATEAU
B. WYOMING BASINS
C. COASTAL PLAIN
D. NORTHERN ROCKIES
E. SOUTHERN ROCKIES
F. GREAT PLAINS
G. BASIN AND RANGE
H. PACIFIC COAST
I. CENTRAL LOWLANDS
J. APPALACHIAN HIGHLANDS
K. COLUMBIA PLATEAUS
L. SOUTHERN CANADIAN SHIELD
M. ALASKA
PROBABLE AND/OR POSSIBLE POTENTIAL RESOURCE
SPECULATIVE POTENTIAL RESOURCES
URANIUM ENDOWMENT ONLY: NO POTENTIAL RESOUR
ESTIMATED AT $100/lb U_3O_8 FORWARD COST
A RESOURCE REGION IDENTIFICATION
A
B
C
D
E
F
G
H
I
J
K
L
M

March 2, 1982

Judy K Alaback
P.O. Box 181
Philomath, OR 97370

Senator Slade Gorton
Senate Office Building
Washington, D.C. 20510

Dear Senator Gorton,

In regard to your proposed bill S.1866, the Safe Drinking Water Regulatory Reform bill, I would like the following comments entered into the hearing record.

I strongly support the current Safe Drinking Water Act and so I oppose S. 1866 since this bill will weaken the Act. Changing the standard from protecting the public from "adverse effects on the health of persons" to the less strict standard of "unreasonable risk to the health of persons" will make the wording of the Act ambiguous.

Carcinogenic chemicals as well as other harmful materials in drinking water must be treated to protect the health of the public. I urge you to keep the existing treatment technology requirements in Section 1401 of the Act as well as the existing public notification of violations process.

Finally the protection of irreplaceable sole source aquifers should be high priority. It is important that the E.P.A. be required to complete their National Ground Water strategy as soon as possible.

Thank you for the opportunity to voice my concerns on this issue of importance to the health and safety of all citizens.

Sincerely,

Judy K. Alaback

Judy K. Alaback

Senator Slade Gorton.
U.S. Senate
Wa. D.C. 20510

March 16, 1982

St. Rt. 57B
Kamish, ID 83538

Dear Senator Gorton,

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

I oppose your bill S. 1866 and support the current Safe Drinking Water Act. I would like to see the existing notification process for water that exceeds health standards kept, and not weakened.

Another standard I feel is important is the protection of the public from "adverse effects on the health of persons". I do not want this protection watered down.

The existing treatment technology requirements in Sec. 1401 are important - people need to be protected from carcinogenic chemicals, not just pathogens and dirty-looking water.

I think the structure of the advisory council should be left as it is.

Lastly, I would like to see the protection of sole source aquifers strengthened. I urge that the EPA be required to complete their National Ground Water strategy as soon as possible.

Please send me a copy of the hearing testimony.

Sincerely, Bobby Barr

PHILLIP H. JONES, M.D. M.P.H.
District Health Officer

Phone 676-6720
Env. Health 676-6724
County 384-1528

BELLINGHAM & WHATCOM COUNTY DISTRICT
DEPARTMENT OF PUBLIC HEALTH
Community Health Center — 509 Girard Street
P. O. Box 935
Bellingham, Washington 98227

March 4, 1982

The Honorable Slade Gorton
U.S. Senate
127 Russell Senate Building
Washington, D.C. 20510

Dear Senator Gorton:

I would like to comment on PL 93-523, the Federal Safe Water Drinking Act of 1974.

We at the local level of government are seeing the ultimate results of this law. I am sure that there will be an impact for the general betterment of public water supplies throughout the United States. However, there are some parts of the law that could be improved and I have the following points to make:

1. Before public notification is required there is no evaluation made as to why the maximum contamination level was exceeded. For example, with a high bacteriological count, the cause may vary from such extremes as improper water sampling technique to broken sewer and water lines. The Health Department should be allowed to make an evaluation of the potential health hazard before requiring notification of the water system customers. Notification as it is now done is generally meaningless to the consumer and is ignored.

2. There needs to be more flexibility in the chemical and radionuclide testing requirements. In some areas of the country, the sampling is unnecessary and a waste of money.

3. Frequency of the chemical testing should be reevaluated especially for ground water supplies. Again more flexibility is needed nation wide.

In conclusion, the State and Local Health Departments should be given more discretionary authority as to what requirements are necessary.

Sincerely,

Bert Brainard

Bert Brainard, R.S.M.P.H.
Director Environmental Health

March 16, 1982

Senator Slade Gorton
127 Russell Senate Office Building
Washington, DC 20510

Sir:

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization. I feel strongly enough to write my wishes, but cannot travel to the nation's capital to present them at the hearing.

1. I would like to see our country write and implement a plan for maintaining the drinkable quality of our groundwater supplies, including funding for strict enforcement of standards.

   Too many odd batches of chemical wastes are still being dumped in too many out-of-the-way places. The results of many of these shady affairs has been disastrous --but without regulations and enforcement, the victims have no justice to reach for.

2. Please see that we remain protected by Section 1401's water treatment requirements pertaining to carcinogenic chemicals in addition to treatment for turbidity and disease organisms.

3. Allow the public--those who must drink the water--to continue to be notified of violations of health standards due to contamination (of any kind) of drinking water. Informed individuals can continue to make their own choices about drinking the water; uninformed persons would be denied the right to choose.

4. Maintain in the Safe Drinking Water Act all possible requirements that are designed to protect water drinkers from adverse health effects. Upgrade the requirements, if possible. Water is the essential ingredient for life. Please see that we are guaranteed the very highest quality drinking water we can have.

I am not an affluent industrialist, nor one whose living depends on being able to add chemicals at will to an underground sump, from which they seep into the water supply beneath the surface. I am a common citizen, one of about 230 million in this country, who depends on clean drinking water for a healthy existence. I also am a voting citizen, but even if I weren't, I would still depend on you to create the laws and procedures by which the safety of my drinking water is protected. I am counting on you to create and enforce very strict standards. Please keep the Safe Drinking Water Act at least as stringent as it is; if you must change it, strengthen it.

Sincerely,

Ruth Moorhead Flanagan

Ruth M. Flanagan
625 Lincoln Street
Walla Walla, WA 99362

12661 NE 109th
Kirkland, WA 98033
March 9, 1982

Senator Slade Gorton
U.S. Senate
Washington, D.C. 20510

Dear Senator Gorton:

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

As a concerned citizen I would like to state my opposition to S. 1866 and support for the current Safe Drinking Water Act. The existing public notification of violations must be maintained. The public has a right to be informed when drinking water exceeds health standards. My understanding is that the American Water Works Assoc. (AWWA) wishes to amend the existing standard which protects the public from "adverse effects on the health of persons," and to change this wording to "unreasonable risk to the health of persons." This would be dangerous and unacceptable, as there are no guidelines as to what would be considered unreasonable risk.

The existing treatment technology requirements in Sec. 1401 of the Act must also be kept. Rather than weakening the existing Safe Drinking Water Act, Congress should be working to strengthen it. For example, the EPA should be required to complete their National Ground Water strategy as soon as possible, and there should be a provision for the protection of sole source aquifiers.

I know I speak for many concerned people in my community. I would appreciate a copy of the hearing testimony if this is possible. Thank you for your attention to this matter.

Sincerely,

Heather S. Collins

Heather S. Collins
(Dr. & Mrs. Gregory Collins)

WESTSIDE MEDICAL ASSOCIATES
Physicians & Surgeons
578 W. 11th
Eugene, Oregon 97401
—
Telephone (503) 687-0578

Sarah Hendrickson, M.D., P.C.
Tom A. Jefferson, M.D.
Diplomates, American Board of Family Practice

Scott Halpert, M.D., F.A.A.P
Diplomate, American Board of Pediatrics

March 2, 1982

Senator Slade Gorton
U.S. Senate
Washington, D.C. 20510

Dear Senator Gorton:

I am a physician in private practice of Family Care Medicine. I am also one of five Commissioners at the Eugene Water & Electric Board.

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

As a physician, and a Water Board Commissioner, I oppose the Regulatory Reform bill S. 1866. We are proud of our pure water here in Eugene. We depend on the EPA to help keep this excellent. I feel that the existing standard "adverse effects on the health of persons" completely reasonable to protect the public. I oppose any amending which would reduce this strict standard.

I completely support the controlling and monitoring of potentially carcinogenic chemicals that may occur in our drinking water supply. I strongly support the maintenance of your existing treatment technology requirements.

As a publically elected Board member, I also feel very strongly that public notification of violations of drinking water standards must be kept as strongly as possible. I do not feel that weakening the notification requirements serves any public use whatsoever.

I also support the existing structure of the National Drinking Water Advisory Council. I feel that industries in the American Water Works Association are quite adequately represented, but that without public input of persons concerned seriously with our nation's health, that this advice might well be meaningless.

Please send me a copy of the testimony presented at your hearings on the Regulatory Reform bill.

Thank you very much for your attention.

Sincerely,

Sarah Hendrickson, M.D.
SH:ml

TESTIMONY OF N.W. OFFICE FRIENDS OF THE EARTH

My name is David E. Ortman, Conservation Representative for the N.W. office; Friends of the Earth, 4512 University Way N.E., Seattle, WA 98105. Friends of the Earth is a national environmental organization with approximately 3,000 members in the Northwest and 1,400 members in the state of Washington.

We appreciate the opportunity to provide testimony on provisions of the Safe Drinking Water Act (SDWA) which expires this year, and to discuss issues raised by the Toxic Substances and Environmental Oversight Subcommittee regarding implementation of the SDWA, changes contained in proposed S. 1866 and other issues.

However, we wish to express our grave concerns regarding the direction the Reagan Administration is moving with regard to the Environmental Protection Agency. It is a disgrace that ten years after Stockholm, this Administration has chosen to abandon its role as the world leader in environmental protection.

EPA's handling of the SDWA is a case in point. There can hardly be a need for regulatory reform when EPA has been so timid in meeting the goals of the Act - to protect the public health by ensuring the safety of drinking water. Of particular concern are the budget constraints facing EPA. EPA can not do twice as good a job on half the budget. We believe the most cost-effective approach is one of prevention. Thus, we have the following comments on the major issues being considered by the Subcommittee:

1. Administrative review. We are particularly concerned about S. 1866, which is billed as the Safe Drinking Water Regulatory Reform Act. This would leave one with the conclusion that the SDWA is working adequately and only requires minor procedural changes.

Unfortunately, this is not the case - the very procedural changes proposed in S. 1866 would have profound and adverse impacts on the substance of the SDWA. We believe that the Administrative Procedures proposed appear themselves to be burdensome, especially the proposed requirements for cross-examination as well as judical review depending on location of impacts. We might suggest however, that inclusion of discovery, to allow citizen groups to obtain all pertinent industry and EPA documents, be considered and proposed.

The requirement for a Benefit/Cost Analysis is likewise unwarrented in view of the existing requirements of E.O. 12291. In any event, those who promote B/C Analyses should carefully examine the record of the Corps of Engineers in developing their B/C ratios over the past number of years, particularly the successful court challenges involved.

2. Basic standard for setting maximum contaminant levels. We strongly oppose the changes suggested for standard setting from "adverse effect on the health of persons" to the much less protective "unreasonable risk to the health of persons". This change

represents an "unresonable risk to the health of citizens" and should be rejected. In effect, this change would require that the public could not be protected until the level of exposure and the likelihood of harm became "unreasonable". This is not regulatory reform or fine tuning - this is gutting the SDWA!

3. Treatment techniques. Instead of eliminating the authority to prescribe treatment techniques to protect public health when the setting of a maximum permissible contaminant level is either prohibitively expensive or technologically infeasible, EPA should set up its R&D work in this area to broaden the options and number of possible treatment techniques.

4. Make-up of Drinking Water Advisory Council. We object to specific seats being held on the proposed amended Council by publicly and privately owned water suppliers. No corresponding specific seats are allocated to environmental organizations. The proposed changes would appear to be inconsistent with the Federal Advisory Committee Act.

5. Agency authority to amend interim regulations. We have no position on this issue at this time.

6. Public notification of violations. There is no basis or rationale for amending Section 1414(c)(1)(A). Public awareness can only be assured by notice of any violation. The public can adequately judge what violations are minor, infrequent or procedural. If anything, Congress should shorten, from the present 90 days, the period after the violation occurs before the public must be notified. Otherwise this section should be retained.

7. Variances and exemptions. We oppose the suggested changes to variances and exemptions. Rather than concerning itself with how to exempt small systems from complying with the SDWA, the Subcommittee should direct EPA to resurrect its proposed ground-water protection strategy to insure that ground water drinking water supplies, especially for small systems are preserved, protected and maintained. The focus should be on prevention of contamination, which is far cheaper than attempting clean-up and treatment after the fact. We oppose exempting small systems from the SDWA automatically.

8. Sole soure aquifer protection. We strongly urge that this section of the SDWA be strengthened - that a ground water protection program be established which protects sole source aquifers at both the Federal and state level. The Subcommittee should request that EPA give more attention to this program. Apparently only seven aquifers have been designated to date. We feel very strongly that protection of sole source aquifers is essential in order to preserve viable drinking water supplies for this nation.

9. Small or rural water system compliance. Lengthening the time in which a state could maintain a drinking water regulatory program in non-compliance with a revised federal standard yet still retain "primary enforcement responsibility" under the Act and receive program grant support is unwarrented. The current 18 months deadline for complaince should be maintained.

In conclusion we have attached two articles and an editorial which we would ask to be placed in the record along with our testimony. The concerns of toxic contamination of drinking water are very real in the state of Washington. We do not believe that the Subcommittee should amend the SDWA to provide citizens with less protection than they now have. We strongly urge that strengthening amendments should be proposed to increase the effectiveness of the sole source aquifer program and to insure the public participation is an integral part of the SDWA.

Thank you for the opportunity to submit this testimony.

RT. 1 Box 270A
Steelville, Mo 65565
March 5, 1982

Senator Slade Gorton, U.S. Senate
WA. D.C. 20510

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

I oppose S. 1866 + I support the current Safe Drinking Water Act. I would also like to see that the existing notification of violations process be kept. I do not want this notification requirement weakened.

I also want the existing standard to be kept which protects the public from "adverse effects on the health of persons".

Please keep the existing treatment technology requirements in Sec. 1401 of the Act.

Please leave the existing structure of the advisory concil as it is.

I urge the EPA to complete their National Ground Water strategy as soon as possible. We need to protect sole-source aquifers.

I am requesting a copy of the hearing testimony & thank you.

Sue Harley

523 North C St.
Tacoma, Wa. 98403
March 3, 1982

Senator Slade Gorton
U.S. Senate
Washington D.C.

Honorable Senator Gorton;

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

The bill S 1866 if passed will weaken the Act greatly. I believe it would be most unwise to change the requirement of public notification of contamination which exceeds health standards. The American Water Works Assn. would like the Act changed from protection of the public from "adverse effects on the health of persons" to a lower standard of "unreasonable risk to the health of persons". This is unacceptable. In this same vein the AWWA would like th have the requirement for the treatment and monitoring of drinking water for carcinogenic chemicals eliminated. The existing technology requirements in Section 1401 of the Act should certainly be kept in force.

The present National Drinking Water advisory council is doing a good job and should be left alone. I urge you to insist that the EPA complete their National Ground Water strategy without delay.

I would greatly appreciate a copy of the hearing testimony.

Sincerely,

Margaret M. Hilke

13, March 82

Senator Slade Gorton
U.S. Senate
WA. D.C. 20510

Dear Senator Gorton

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

Although I have supported you as Atty General and during your campaign for the Senate and am in agreement with most of your views, I must indicate my opposition to some of the contents of S. 1866 as you propose them. I believe the current act is not in need of modification except in the area of aquifers. I urge inclusion of wording to strengthen protection of ground water sources.

In reference to the present proposals I urge you to retain public notification of violations, protection from chemical carcinogenics, the current structure of the National Drinking Water Advisory Council and protection from adverse effects on the health of persons.

As resident of Washington State I hope that we are all aware of the folly of depending too strongly on "experts" especially as regard to public (?) utilities.

Please include me on the list of those wishing to receive a copy of the hearing testimony.

As this is the only area of disagreement yet to surface and I am hopeful this will be the only one, you may be sure of my continued support, especially regarding economic matters.

Yours Sincerely

Robert A. Holcombe

5108 S Alaska
Seattle 98118

March 7, 1982

707 Stewart St. N.E.
Salem, OR 97301

Senator Slade Gorton
US Senate
Washington, D.C. 20510

Dear Senator,

PLEASE PLACE THIS LETTER IN THE HEARING RECORD FOR THE SAFE DRINKING WATER ACT REAUTHORIZATION.

Sorry Senator, the Safe Drinking Water Act (SDWA) does not need S. 1866. Rather the Act should be reauthorized without the weakening thrust of the changes sought by the AWWA.

Remember, the purpose of the SDWA is to protect the public from "adverse effect" on public health from unsafe water. What kind of protection is afforded by a standard stated as an "unreasonable risk" to health? Modern technology and common decency demand that public health not be compromised for the almighty dollar sought by private enterprise.

And carcinogens are as health-threatening for the public as disease or turbidity contamination. §1401 should be preserved INTACT.

Further, existing notification requirements in the SDWA stand as MINIMUM safeguards. Is the object of the SDWA the protection of the people at large or to compromise the best interests of the public for those who profit from providing an essential commodity to that public?! The public have the right to know that the water they're asked to (or forced to) purchase is unsafe.

Keep the existing National Drinking-Water Advisory Council" as is"!

The SDWA could be improved by legislation protecting sole-source aquifers. A directive to the EPA to finish its National Ground Water Strategy as quickly as possible is necessary.

Sincerely,

Bill Howell / Eileen Howell

P.S. Please send me a copy of the hearing testimony on the SDWA.

Thank You

2780 Aldergrove Rd.
Ferndale, Wa 98248
Feb. 24, 1982

With every level of government frantically searching for ways to save money, once again we would like to suggest some cost-saving ideas in the area of the **Safe Drinking Water Act which** will work. Please read on.

It is time for governmental agencies to turn the rules and regulations game completely around. Why don't state and federal departments ask the local entities what works for them and have this information fed to the top rather than the federal level imposing more and more inappropriate rules, with more money and people needed to enforce these?

We feel caught between controversies with the Department of Ecology and the Department of Social and Health Services. The constant threat of a "take-over" by one or the other agency has resulted in a rash of regulations that are costly and unnecessary for the water quality where the water is actually used--the person who turns on the tap for a drink.

As the cutbacks in federal funding begin, it will be necessary for state expenditures to be curtailed also. The better coordination between state and county health departments could eliminate much time and money for all concerned, including we who try to do a good job running water associations with little overhead expense.

Let me suggest a few ideas in the area in which we feel capable, namely water quality for associations:

1. The state and local health departments should be given more discretionary authority in what the requirements should be:
   a. There needs to be more flexibility in chemical and radionuclide testing requirements. In many areas of the country, the testing is unnecessary and a waste of money.

   b. Frequency of the chemical testing should be scrutinized, especially for groundwater supplies. For wells, this is a very different matter. Again, more flexibility is needed nationwide, with imput from county health departments.

2. Notification by the state Department of Social and Health Services a month or two (or more) after the occurance of a high bacteriological count, as happens now, is meaningless, is ignored, and is very poor public relations. No evaluation is made for the cause of the bacteriological counts that exceed the maximum. It may vary from improper water sampling to a broken water line. The county health department should make the evaluation of the potential health hazard before requiring notification of water system customers. If we honestly intend to save government spending, the first priority should rest with the county department. If additional help is needed, then state and federal agencies could be called to help.

This letter is being sent to both state and federal level government persons and agencies, as well as the county appropriate persons. Our Whatcom County Water Association Committee represents over 100 independent associations in the county. We hope these suggestions will be given some consideration.

Respectfully,

Paul Larsen

Paul Larsen, Chairman,
Whatcom County Water Association Committee
2780 Aldergrove Road
Ferndale, Wa 98248

North 5308 Oak
Spokane, Wa. 99208
March 4, 1982

Sen. Slade Gorton
Senate Office Bldg.
Washington, D.C. 20510

Dear Sen. Gorton:

Please, place this letter in the hearing record for the Safe Drinking Water Act requthorization.

We are not in favor of the changes that S.1866 would bring about in regard to the Safe Drinking Water Act.

The present method of public notification of violations when drinking water is unsafe should be continued. Present standards for determining when drinking is unsafe should be maintained. Sec. 1401 of the Act, which concerns what is to be covered by treatment technology, should be kept intact. And the present structure of the National Drinking Water Advisory Council should not be changed.

The only change that should be made in the Safe Drinking Water Act would be to strengthen protection of sole source aquifers. Also, the EPA should be required to complete their National Ground Water strategy as early as possible.

The government should aggressively deal with inadequate drinking water and effectively defend our potable water supplies against harmful degradation.

Sincerely,

Richard J. Leon

Richard J. Leon

Sharon Leon

Sharon Leon

NEW ENGLAND WATER WORKS ASSOCIATION
A NON PROFIT CORPORATION
ORGANIZED JUNE 21, 1882
850 REAR PROVIDENCE HIGHWAY
DEDHAM, MASSACHUSETTS 02026
TEL. AREA CODE 617 329-9650

March 17, 1982

Honorable Robert T. Stafford
United States Senate
Dirksen Senate Office Bldg., Rm. 5219
Washington, D.C. 20510

Dear Senator Stafford:

The New England Water Works Association, comprised of some 1,450 members representing public and investor owned water utilities, is America's second largest water works organization. Enclosed is a brochure which briefly describes our work and objectives. This year, 1982, we proudly celebrate our Centennial as an organized, active and mature body, having for 100 years served the people of New England and the water supply industry. In view of the need this fall to extend P.L. 93-523, the Safe Drinking Water Act of 1974, and with pending legislation, H.R. 4509 and S.1866, to amend that Act, our Association is taking this opportunity to bring certain matters to your attention.

First, we wish to state that our Association strongly supported the passage of P.L. 93-523 because we believed such legislation was needed to improve the practice of water supply and to protect the public health. The U.S. EPA administration of the Act and its supporting regulations in New England has been fair and equitable. Under the Act's primacy provisions, Connecticut was the second state in the Union to be granted primacy, and by 1978 all but one state, Vermont, had achieved this status and it was granted primacy in 1980.

Following is a review of significant events that have occurred in New England as a result of the Safe Drinking Water Act which will be of interest to you.

1. The water supply surveillance programs of each of our six states have been strengthened. Before the Act some of these programs had fallen to dangerously low levels.
2. Public attention has been focused on the importance of safe drinking water to a degree not noted before.
3. Because of the emergency powers of the Act it has been possible to:
   a. Reduce lead levels in the Region's largest water supply thereby contributing significantly to lowering blood lead levels in children among the 2,000,000 people served by the supply.
   b. Protect the watersheds of two of our largest water supplies from damage by construction of interstate highway systems.
4. Application of the Maximum Contaminent Levels of the Primary Drinking Water Regulations has resulted in the upgrading of many community water supplies.

In view of these positive effects, this Association strongly urges the reauthorization of the Safe Drinking Water Act before it expires September 30, 1982. We also recommend, that until such time as the states may be able to fund their own programs, there be adequate funding to support the states in their discharge of primacy. We recommend further that certain changes be made in the Safe Drinking Water Act to enable more effective administration of it without endangering the public health. Toward this end we recommend passage of legislation embodying H.R. 4509 and S.1866. Some reasons are as follows:

1. Variances and Exemptions - In an area where small water supplies are dominant (75% of the 2,584 supplies in New England serve less than 1,000 people each), the application of variances and exemptions should be in such a way as to not cause undue economic hardship. A simplification of the present variance and exemption procedures and possibly combining them could be helpful.
2. State Primacy - Responsibility for enforcing the Safe Drinking Water Act should continue to rest with the states. Adequate funding for state programs should be authorized until such time that they can fund their own programs.
3. Public Notice - The public notification requirements of the Act should be changed to permit a water utility to not give public notice in cases where a maximum contaminent level was exceeded but where the cause was promptly corrected, there was no recurrence, and the public health was not endangered.
4. Standard Setting - Language from the present standard setting of whenever there "may" be an adverse effect on health should be changed to a more factual determination of unreasonable risk to health.
5. Mandating of Treatment Technology - Treatment techniques should focus on reasonably achievable performance standards and should not be mandated by authority.
6. Cost-Benefit Analysis - There must be sufficient evidence that the benefits derived from certain operations clearly outweigh costs of implementation.
7. Operation and Maintenance Regulations - Regulations should reflect standards that are performance oriented and should free EPA from involvement in criteria and procedures relative to operation and maintenance of a water system.
8. National Drinking Water Advisory Council - We support the concept of the National Drinking Water Advisory Council with well balanced membership and recommend that the views of individual members on the Council be considered in proposing and promulgating regulations.

The New England Water Works Association favors legislation and regulation which safeguards public health. We are happy for the opportunity to make the comments listed above and look forward to continuously working to provide better water for healthful living. I will be glad to answer any questions you may have.

Sincerely yours,

Papken V. Janjigian

Papken V. Janjigian
President

PVJ/jg
Enclosure

March 4, 1982

Senator Slade Gorton
U.S. Senate
Washington, D.C. 20510

Re: Safe Drinking Water Act reauthorization

Dear Senator Gorton:

I am writing with regard to the Safe Drinking Water Act reauthorization and request that my letter be placed in the hearing record for same.

I support the current Safe Drinking Water Act and am strenuously opposed to S 1866, which would significantly reduce the protection of our country's water supply, to the detriment of us all.

Several specifics: I want the existing notification requirement kept, rather than weakened. I want the existing standard of "adverse effects on the health of persons" retained, rather than the weakened "unreasonable risk" standard proposed in S 1866 being substituted. I want the existing treatment technology requirements of Sec. 1401 retained. I want the existing structure of the advisory counsel preserved.

In addition, I want to urge that the EPA be required to complete their National Ground Water strategy promptly, so that sole source aquifers can be better protected.

In writing you to give you my input on this issue, I feel I am addressing one of the most fundamental, critical of the many important issues that are upon us at this time. Pure water is a necessity of life--we must protect our water with a vigilance reserved for the most critical of issues. Maneuvering to weaken the protections we have developed is very much against the interests of people everywhere, and simply cannot be legitimately defended.

I urge you to reconsider your support of S. 1866, and vote in the interests of all of your constituents, rather than a small interest group.

I request a copy of the hearing testimony.

Sincerely,

Sharon B Read

Sharon B. Read

2039 - 26th Avenue East
Seattle, WA 98112

March 5, 1982

Senator Slade Gorton
U.S. Senate
Washington D.C. 20510

Dear Senator Gorton:

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

I am opposed to S.1866 and want to emphasize my support for the current Safe Drinking Water Act.

The current water act certainly is more emphatic about certain regulations, and demands more strigent controls. It is also acknowledged that this in the short term may cost more money. But who can deny the ultimate value of human health. The importance of the public's awarness of what is happening to our water cannot be down played. It is our right as a free nation to demand information about what is happening and to demand protection from powerful organizations that look to economic needs rather than nationwide needs.

Without water there is no life. There is no need to worry about economics. Please realize that the standard for safe drinking water cannot be lessened but, if anything made stronger. Maintain what Americans as a whole have created. Don't change the existing structure of the advisory council. Instead strengthen the protection of sole aquifers. Let EPA be required to complete their Natural Ground Water Strategy as soon as possible. Think of the long term consequences more than anything.

Please send me a copy of the hearing listing.

Sincerely,

Marion Samsam

Marion Samsam
4101 W 45th #3004
Amarillo, TX 79109

Southwest
Environmental
Service

Helping the public find solutions to environmental problems

March 17, 1982

Senator Robert Stafford, Chairman
Environmental and Public Works Committee
U.S. Senate Office Building
Washington, D.C. 20510

Dear Senator Stafford:

Southwest Environmental Service is opposed to S1865, regarding the Safe Drinking Water Act. This Act must be extended beyond its September 30 expiration date, but S1866 does not give adequate protection to the water user for the following reasons:

1. The section requiring EPA to regulate only contaminants that "pose an unreasonable risk to health" is particularly objectionable. Who is to determine what level or risk is unreasonable? Experts have little knowledge of what the long-term health effects of most contaminants are. For example, the rate of cancer has risen alarmingly in the U.S. in the past 50 years. It is very difficult to determine just which environmental factors may have contributed to this rise. We feel that any risk to health should be avoided and that EPA should not be prohibited from regulating any suspected contaminants.

2. The requirement that benefits of regulations must outweigh the costs has two basic flaws: a) Cost-benefit analyses of this type are very difficult to formulate and depend on such hard-to-quantify aspects as the value of good health or human life, and such economic factors as a changing interest rate and changing rates of inflation. Even very small estimates of a changing inflation rate can completely change the results of a cost-benefit analysis; b) Cost-benefit analyses do not speak to assigning of costs. While a cost-benefit analysis may show that it is cheaper to pay for ill health than to clean up polluted water, different individuals pay the costs.

In Arizona, we have had considerable controversy over some groundwater contaminated by TCE. Three aircraft companies in the

P.O. Box 2231, Tucson, Arizona 85702 • (602) 624-2353

DIRECTORS
[illegible]
President
[illegible]
Vice-President
[illegible] M. WILSON
[illegible]
JOHN W. [illegible]
Treasurer
ABBIE APPLETON
Member
DENNIS BREEN
Member
RICHARD DUFFIELD
Member
EDGAR McCULLOUGH
Member
THOMAS [illegible] PEW
Member
SOL RESNICK
Member
REYN VOEVODSKY
Member
PETER K. ZIMMERMAN
Member

Tucson area disposed of solvents over a long period of time. The contaminants (TCE) have only recently been detected in the water, and six wells in Tucson have been closed, a major financial loss to the water utility. Two of the three aircraft companies in Tucson have since gone out of business and costs can no longer be recovered from them. Attempting to recover costs from the remaining company will undoubtedly result in years of litigation.

This problem has also occurred in Scottsdale and other parts of Arizona.

The local water utility does not feel that water users should have to pay the costs of cleaning up the contamination and has requested help from the state and federal governments. The state government is, of course, under the same financial constraints that most levels of government are and cannot continue to pay to clean up contaminated water. The Superfund is not applicable to the particular situation, and in any case it does not contain enough money to take care of all the problems. We feel that future cost problems of this type must be avoided.

3. In several places, the bill mandates cumbersome procedural requirements which place more barriers in the way of efficient regulation and hinder public participation.

Arizona is such a water-short state that we cannot afford to lose major parts of our aquifers. S1866 does not give us the protection we need--a meaningful extension of the Safe Drinking Water Act would help. We urge you to vote for a meaningful extension, not S1866.

Sincerely,

Priscilla Robinson

Priscilla Robinson
Director

PR/jj

March 5, 1982

Senator Slade Gorton
United States Senate
Washington, D.C.   20510

Senator Gorton:

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

We are opposing the bill, S. 1866, which you have introduced; and we are supporting the Safe Drinking Water Act as it now stands.

We feel somewhat assured by the current Act as it requires public notification of violations. We understand the American Water Works Association wants this requirement to be lessened. That would not be acceptable to us.

The current Act is designed to protect the public from "adverse effects on the health of persons." Its standards should be kept strict and not lessened.

We also believe that the existing treatment technology requirements in Section 1401 of the Act should not be amended but should be kept as it is.

The National Drinking Water Advisory council is in danger of being changed or even eliminated. We feel the Council is very important and should be supported in its existing form.

One last thing which seems very urgent to us is that the Environmental Protection Agency should be required to complete its National Ground Water strategy as soon as is feasible.

If at all possible, we would like to receive a copy of the hearing testimony.

Sincerely,

Charleen J. English Thomas F. McCabe

Charleen J. English & Thomas F. McCabe

General Delivery
Manson, WA 98831

March 2, 1982
PL1- 171 Pathfinder
Port Ludlow, WA 98365

The U.S.A. Senator, Slade Gorton,
The Senate of the U.S.A.
Washington, D.C 20510

Please place this letter in the hearing record for the Safe Drinking Water Act reauthorization.

The Supreme Court ruled in December 1980 that clean-water standards can be enforced without considering the cost of compliance. S. 1866 should certainly be opposed and the current Safe Drinking Water Act supported.

The American Water Works Association should not try to stop public notification of violations of drinking water health standards. The notification process (on water bills) should be maintained.

The current act's standards designed to protect the people from adverse effects on health must not be weakened, permitting the E.P.A. to decide if drinking water contamination is permissible?

The existing treatment technology requirements in Section 1401 of the Act must be respected in order to include carcinogenic, toxic chemicals along with diseases and turbidity.

The existing structure of the National Drinking Water Advisory Council must be left alone. And E.P.A. must complete their National Ground Water Strategy immediately. The protection of sole source aquifers must be strengthened.

Thank you for your interest in the Safe Drinking Water Act.

E. ZAHN

SAFE DRINKING WATER

WEDNESDAY, JULY 28, 1982

U.S. SENATE, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,

Washington, D.C.

The subcommittee met at 2:30 p.m., in room 4200, Dirksen Senate Office Building, Hon. Slade Gorton (chairman) presiding.

Present: Senators Stafford, Gorton, Baucus, and Moynihan.

OPENING STATEMENT OF HON. SLADE GORTON, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator GORTON. Good afternoon.

This is a hearing of the Subcommittee on Toxic Substances and Environmental Oversight, a subcommittee of the Senate Environment and Public Works Committee. The hearing this afternoon will focus on S. 2131, the Sole Source Aquifer Protection Act, and ground water protection. This hearing concludes 4 days of hearings on the reauthorization of the Safe Drinking Water Act, S. 2131, the Sole Source Aquifer Protection Act, and S. 1866, the Safe Drinking Water Regulatory Reform Act.

On November 18, 1981, I introduced S. 1866, the Safe Drinking Water Regulatory Reform Act, which would, if enacted, make several changes in the substance of the Safe Drinking Water Act. A major issue addressed in section 3 of S. 1866 would change the basis by which EPA could set drinking water standards from the present "any adverse effects" standard to a new standard, "pose an unreasonable risk to." At the time I introduced S. 1866, I stressed that I was not wedded to every change which is proposed in this bill. After 3 days of hearings and the testimony of various witnesses before this subcommittee concerning the impact of a change on the basis by which drinking water standards are set, I have concluded that the public health will not be improved by changing the present language in the act. I favor retaining the present "any adverse effects" standard as the basis for present and future drinking water standards.

It is my opinion that a change in the standards to "pose an unreasonable risk to" would not necessarily change any present or future drinking water standards. I believe that the actual standards which are promulgated by EPA and thus the degree of public health protection given to our citizens results from the Environmental Protection Agency's attitude toward implementing the Safe Drinking Water legislation. A change in the basis for standard setting would not improve the public health protection under the act.

If this is the case, I see no compelling reason to support a change in standard setting. I feel that the only result of a change in standard setting will be additional litigation while the courts try to ascertain what the new legislation means.

The issue which we are considering this afternoon, ground water protection, and more specifically sole source aquifer protection, is an issue of vital concern to our citizens. Maintaining safe, uncontaminated drinking water for America's cities and communities is a highly important issue to our citizens. Previous hearings on March 29, May 19, and May 26 indicate ground water contamination is a pervasive and growing problem. Concern over ground water contamination has been voiced by public water suppliers—Federal, local, and State officials alike. This hearing will explore the ground water contamination problem and appropriate responses to it, including the approach specified by S. 2131.

Because ground water protection is an issue shared by two subcommittees, Toxic Substances and Environmental Oversight and Environmental Pollution—through oversight of the Safe Drinking Water and Resource Conservation and Recovery Acts, respectively—future ground water protection efforts will be addressed jointly by the two subcommittees.

Regional and State differences exist in the types of ground water use, the extent of contamination, and the competition for use by agriculture, energy, and drinking water suppliers. Also, laws governing ground water use vary greatly by State. Because any approach to ground water protection must account for and deal with these differences, I feel it is appropriate for some future ground water hearings to be conducted on a regional basis.

Maintaining safe drinking water is, as we have heard through 3 days of hearings, an activity of vital concern to our Nation's communities and cities. I plan to continue to work toward the goal of providing safe drinking water to our communities.

Our first witness will be Mr. Philip Cohen from the U.S. Geological Survey, together with several of his associates.

Mr. Cohen, you may proceed. Obviously you have a very long statement, and we would appreciate your summarizing it orally. Your entire statement, together with the exhibits included with it, will be a part of the record.

STATEMENT OF PHILIP COHEN, CHIEF, WATER RESOURCES DIVISION, U.S. GEOLOGICAL SURVEY, ACCOMPANIED BY JACK B. ROBERTSON, CHIEF, OFFICE OF HAZARDOUS WASTE HYDROLOGY, AND GORDON BENNETT, CHIEF, GROUND WATER BRANCH

Mr. Cohen. Thank you, Mr. Chairman.

I would like to introduce my colleagues. On my left, at the briefing board, is Mr. John B. Robertson, who is the Chief of our Office of Hazardous Waste Hydrology, and on my right is Gordon Bennett, Chief of the Geological Survey's Ground Water Branch.

We are here today mainly to respond to questions raised by this subcommittee regarding, one, the status of ground water resources in the United States; two, the programs of the U.S. Geological Survey that address ground water contamination; three, activities of Federal, State, and local governments to protect ground water resources from contamination; and four, needed expertise and knowledge at the State and local levels to effectively protect ground water.

Ground water flow systems are complex hydrologic units and are difficult to assess. Such systems commonly are characterized by circulation patterns which involve deep flow at substantial depths beneath the land and shallow systems superimposed on these systems which generally are in continuity with the Nation's riches.

Contamination of such ground water systems can occur at almost any point in the flow system. Contamination can occur, and commonly does, from above. It can occur by lateral movement into a flow system and by vertical movement upward into a flow system.

Pumpage of ground water in the United States—and this is depicted on our first graph—nearly tripled in the past three decades, from 35 billion gallons a day in 1950 to nearly 90 billion gallons a day in 1980. The major use is for irrigation, which roughly accounts for about two-thirds of ground water pumpage. Moreover, half the population of the country relies on ground water for domestic supplies.

Despite the increase in pumpage, ground water resources as a whole are not overdeveloped on a national level. With proper management, substantial further increases in pumpage are possible in parts of the country without causing hydrologic problems. However, overdevelopment problems do exist. For example, two of the well-known problems are threatened ground water depletion in the southern high plains, specifically this part of Texas and New Mexico, and subsidence in the San Joaquin Valley of California, perhaps the largest single area of ground water development in the United States and one of the largest in the world.

The most important aquifer systems in the United States include the Central Valley of California, the Ogallala aquifer of the high plains. Both of these areas involve agricultural activities on the order of tens of billions of dollars, supported in part in California by ground water and almost entirely by ground water in the high plains. Additionally, major aquifers include the alluvial valley in southwestern part of the United States, the Atlantic coastal plain, the gulf coastal plain, the Mississippi Embayment, the carbonate aquifers of the Florida peninsula, the basalt aquifers of the Snake River Plain and the Columbia Plateau, the Dakota sandstone of the northern great plains, sandstones and limestones of the Midwest, and the glacial aquifers in the northern part of the country.

Because ground water is commonly invisible and occurs in complex geological systems, we do not know with great accuracy how much nor how badly our ground water is contaminated. However, the National Water Well Association has estimated contamination on an areal basis is probably no greater than 1 percent of our potable shallow ground water supply. We have done some independent calculations to verify that number, again, without great accuracy or precision, but our estimates are roughly comparable to the National Water Well Association.

However, even a small percentage of ground water contamination is serious because generally we find ground water contamination in areas of densest population and/or industrial activity.

The chemical and biological degradation of our ground water has resulted from a variety of sources, including about 7,000 known hazardous waste disposal sites, nearly 200,000 other chemical sites and impoundments, about 200,000 municipal landfills, and countless septic tanks, disposal wells, leaks and spills, on the order of many, many millions.

An estimated 6 billion metric tons of hazardous waste have been disposed on or in our land since 1950, with the current 40 million metric tons per year growing at about 5 percent per year. Septic tanks and cesspools are estimated to discharge about 800 billion gallons of effluent into our ground water on an annual basis.

To date, drinking water supplies from ground water for more than 2 million people have been lost due to contamination. It is clear that the problem is serious and one that is, in all likelihood, going to get worse before it gets better.

Although industrial toxic waste disposal sites such as Love Canal are significant sources of contamination, EPA ranks ground water pollution sources in the following order: First, septic tanks, second, petroleum exploration and development activities, third, landfills and dumps, fourth, agricultural practices, and fifth, waste piles, sumps, and lagoons.

Toxic contaminants include dozens of inorganic and radioactive elements and compounds, tens of thousands of organic compounds, and I might add the synthetic organic chemical industry is producing new compounds of thousands of new compounds a year, most of which are fairly toxic. Among the most commonly occurring toxic contaminants are nitrate, heavy metals, aromatic hydrocarbons, trichloroethylene and related solvents, phthalates, toluene and benzene.

The behavior and fate of contaminants in ground water is governed by a complex matrix of interdependent physical, chemical, and biological processes. Although we know something about all these processes, our knowledge is inadequate to make quantitative assessments or predictions of contaminant behavior in most real world systems. Considerable research effort is needed to understand the relative importance of these processes to the point we can incorporate simplified models. Also demanding attention is better monitoring technology and enhancement of indirect sensing techniques such as surface geophysical methods.

In many cases contaminated ground water cannot be cleaned, at least not economically or completely. However, this is another area in which we know far too little.

The Geological Survey collects data on a systematic basis to determine the quantity, quality, and use of the Nation's surface and ground water. It conducts intensive water resource investigations and related basic and problem-oriented research in hydraulics, hydrology, and related fields. It has no regulatory responsibility and water resource development responsibility. Its mission is to provide the water resources information needed for the best use and management of the Nation's water resources.

The USGS maintains several programs designed to increase our knowledge of ground water resources and quality; among these, ground water investigations carried out under Federal-State cooperative programs and those on behalf of other agencies.

Another major program is our regional aquifer systems analysis program and two programs relating specifically to waste disposal and ground water contamination, a radioactive waste program and a toxic waste ground water contamination program.

The toxic waste ground water contamination program is a new effort which includes the following major activities: First, State and national assessment of ground water quality; second, research on geologic and hydrologic processes that control behavior and fate of contamination in ground water; and third, identification of areas potentially suitable for disposal or storage of hazardous wastes.

State and local authorities in practice assume much of the responsibility for protection of ground water supplies and ground water quality. Permitting or other control of ground water utilization, where such controls exist, has traditionally been exercised by the States. Local authorities in regulating land use invariably enter into decisions which impact ground water quality. It is essential that State and local governments maintain sufficient in-house expertise to address ground water aspects of these regulatory functions. Through the cooperative program of the U.S. Geological Survey we have striven to build that expertise and provide the information and assistance required to support and supplement it.

Thank you.

Senator GORTON. Thank you very much, Mr. Cohen.

One of your charts illustrated the status of various research activities in aquifers by geographical location in the United States. To the extent that research on ground water problems in general is accelerated, what kind of priority would you set? What are the areas or the questions which most urgently require an answer? Are they by geographical area as illustrated on this map, or are they by subject matter?

Mr. COHEN. I believe, Mr. Chairman, that an appropriate mix of both is probably the most effective way of addressing the problems the Nation now has and the problems that we can anticipate in the future. As I stated in my summary statement, ground water systems involve three-dimensional masses of geologic units. They normally are very, very complex units. It is important, and that is one of the goals of the regional aquifer systems analysis study, to define the geometry and characteristics of those systems so that we can answer such questions as, if a given amount of development occurs at this site, what will the result be in the ground water system? Results are of interest with regard to ground water contamination, are directed toward such issues as the direction of ground water movement, the rate of ground water movement. The tools that are available to answer those questions require a definition of the hydro-geologic framework.

On the other hand, there are many complex chemical reactions that occur in the unsaturated materials above ground water bodies and within the ground water bodies. In order to address those questions related to those matters, a great deal of ongoing research is directed toward understanding the interaction between and among the chemicals and the aquifer materials, degradation of certain chemicals within aquifers, and biological reactions between certain chemicals, and the biology of the materials above and within the zone of saturation.

So I think, Mr. Chairman, a broad mix of research and related investigation is required to address the problems that we now have and those that we can anticipate.

Senator GORTON. What do you feel the quality of coordination between Federal Government agencies and State and local governments on this subject to be at the present time?

Mr. COHEN. I think the coordination among the Federal agencies and interaction between the Federal agencies and State and local governments is excellent. I think it has improved dramatically during the past 5 years or so, and I think there are efforts underway which will continue to enhance that coordination. But by and large I would characterize it as being good. We work very, very closely with our sister agencies in the Federal Government. The Geological Survey has formal cooperative arrangements with more than 800 State and local agencies at the present time. So there is an excellent linkage between my agency and State and local governments, and excellent linkage between other agencies and State and local governments.

Senator GORTON. Do they rely on your efforts in this respect?

Mr. COHEN. Yes. 800 is a fairly substantial number, and these cooperative agreements are negotiated annually. At the present time we have a fairly sizable program in which the Federal Government contributes approximately $44 million per year, and these are matched by State and local agencies, for a broad range of activities, including activities in and around Mount St. Helens where we are working with State and local agencies in fiscal cooperation as well as technical cooperation.

Senator GORTON. On the last page of your formal statement you recommend a systems approach to land-use planning and zoning as an alternative to aquifer classification. Could you elaborate a little bit on that, explain what changes it would require?

Mr. COHEN. We think classification is a positive step, but in the minds of some people we are concerned it is one in which the systems that we are dealing with are oversimplified. As an example, one can envision any number of physical systems where the underlying ground water may be of excellent chemical quality and one might decide in order to protect that underlying ground water certain land-use classifications would be desirable. However, an analysis of the physical environment may indicate the underlying fresh ground water body is virtually isolated from any and all activities that may be ongoing above; however, it may be in lateral continuity of an outcrop area 100 miles distance, and in order to protect that ground water body, if it is deemed desirable to do so, land-use controls may be more efficiently applied 100 miles distance. This may be a gross oversimplification, but it points to our concern one must understand in considerable detail how these ground water systems operate, and only when these management decisions can be made to protect a system or if a decision is made to allow the system to deteriorate because it is the most economic and efficient way of doing it, the management decision can be pointed toward the system as opposed to superficial overlaying of land and the quality beneath. That is a gross oversimplification which can lead to difficulty.

Senator GORTON. We are honored to have the committee chairman with us this afternoon. Senator Stafford, do you have any questions?

Senator STAFFORD. Thank you very much, Mr. Chairman. I am really here this afternoon to learn. I am sorry I missed the first part of the presentation due to the vote over in the Senate.

I would assume, sir, that in the northern glacial valleys and along the Atlantic coastal plain much of the water is surface impounded, it is for human, domestic consumption rather than going down into the aquifers. Am I right about that?

Mr. COHEN. You are right, sir, with several notable exceptions. You recall that virtually the entire water supply for the eastern two-thirds of Long Island is ground water, and along the New Jersey coast it is ground water. But as you go up into New England there are some local ground water developments, but more than 50 percent is from surface water sources.

Senator STAFFORD. And the aquifers are relied on the further you get west in the more arid parts of the country; would that be true?

Mr. COHEN. Certainly for irrigated agriculture. In the past, most irrigated agriculture has been in the High Plains and Western United States, although in the past decade there has been a significant amount of supplemental irrigation in the Southeast.

Senator STAFFORD. I notice you said there was good cooperation between States and the Federal Government. Is there good cooperation between the States in the Western, arid parts of the country State-to-State?

Mr. COHEN. Well, of course, there are political and social issues which are defined by State boundaries, and I won't comment on those. But generally there is good professional interaction within the Association of Western State Engineers. These folks are all professionals, they all speak a common language, and they have good technical, professional interaction.

Senator STAFFORD. That is good to hear. Thank you very much.

Thank you, Mr. Chairman.

Senator GORTON. On page 15 of your statement you list the five major sources of ground water pollution. Can you give me briefly the reason that each of these five sources poses a major threat to ground water? Is it volume primarily, or is it the fact that some of the constituents are practically impossible to break down?

Mr. COHEN. The five that you have on page 15, their order represents known cases of ground water pollution and the causative agents. Septic tanks and cesspools, that is totally the function of sheer number. We are dealing with tens of millions of septic tanks and cesspools. We can use the Northeast, as Senator Stafford mentioned. Up to a decade ago there were 4 or 5 million people on Long Island who relied entirely on ground water and dumped all the wastes in septic tanks and cesspools. That resulted in contamination. We can find contamination, generally the magnitude is a function of the density of the population and septic tanks.

Senator STAFFORD. Mr. Chairman, the occasion is so serious I am reminded, speaking of septic tanks, recently I am told the ROTC unit at the University of Virginia ordered 200 septic tanks, and when the president of the university asked them why they had done that, their commander said, "As soon as we learn how to drive them, we are going to attack Virginia Military Institute."

Mr. COHEN. But generally petroleum exploration activity is ranked second in that in local areas of the country with exploration development, there has been a substantial amount of salty water produced as a byproduct to the production of petroleum and other hydrocarbons. That salty water has seeped in the aquifers in the south central part of the United States and caused a fairly large number of reported cases of ground water contamination.

Landfills and dumps, including so-called sanitary landfills, have been used as a method of disposing of waste for hundreds of years. Until the past several decades, it was not recognized these were sources of fairly large numbers of rather toxic compounds that found their way into ground water. And in the past several decades, even though society as a whole has become aware of this phenomenon, landfills and dumps have been used to store even more exotic and more noxious compounds and chemicals, pesticides, for example.

Agricultural practices. As a result of irrigating for agricultural activities, it is inevitable that some of the water used for irrigation will leach through the soil and move down to ground water, that leaching process carrying with it salts, inevitably, and the phenomenon can be minuscule and no consequence to very, very serious, depending on the nature of the irrigation, the chemistry of the irrigation water and the climate. Generally these problems are more severe in that high concentrations of salts are leached downward. It is an aerial phenomenon, with an awful lot of irrigation for ground water, and in the process of evapotranspiration the water is given to these concentrates of salt.

Finally, waste piles, sumps and lagoons, we are dealing with on the order of several hundred thousand of these structures or features scattered throughout the United States. It is an exceedingly difficult engineering task to make these structures waterproof. As a matter of fact, in some cases it is virtually impossible. To assure these structures are not leaking often involves expenditures greater than those that can be assumed by the entity that is creating the structure. That is a long-winded way of saying as long as there are waste piles, sumps and lagoons, they are going to leak, and leak badly.

Senator GORTON. Is each of these five sources roughly equally susceptible to some government, whether Federal, State, or local, intervention and control? Is each of them subject to control on a relatively equal cost-efficient basis?

Mr. COHEN. Certainly the Federal Government addressed the matter in the Clean Water Act and expended on the order of $15 billion to build modern sewage treatment facilities which generally led to the abandonment of cesspools and septic tanks. That is a policy decision the Federal Government has made, and I am aware of the fact the bill is now being considered for reauthorization and it is a major policy issue that this country needs to face. It is a very, very expensive way of addressing the problem, but, as indicated here, it is perhaps the single largest source of ground water contamination. This has been debated for many years and again will be debated thoroughly as a result of the reauthorization of the act.

Petroleum exploration and development activities, generally the oil companies, when made aware of the problem and when made aware of the sensitivities of society to the problem, have the technical wherewithal to control the job themselves, and generally do a good job, with Government encouragement where needed.

Agricultural practices, there is very little that one can do about the concentration of salts other than minimizing or decreasing the amount of water used for agriculture. There is some research ongoing now in the agricultural science community to increase the efficiency of irrigation, therefore apply less water. And as one increases the efficiency of irrigation you decrease the salts associated with evapotranspiration.

With regard to landfills and dumps and waste piles, sumps, and lagoons, this is probably largely a regulatory issue. The problem can now be minimized almost as a direct function of the nature and type of regulations that are developed and applied to address the problem.

Senator GORTON. Senator Stafford.

Senator STAFFORD. I have no more questions. Thank you, Mr. Chairman.

Senator GORTON. I think we will have some additional and some followup questions which we would like to have the opportunity of submitting to you in writing. In any event, your testimony has been most helpful and most enlightening.

Mr. COHEN. Thank you, Mr. Chairman.

Senator GORTON. The next witness will be Mr. David W. Miller of Geraghty & Miller.

STATEMENT OF DAVID W. MILLER, GERAGHTY & MILLER, INC.

Senator GORTON. You may proceed.

Mr. MILLER. My name is David Miller. I am a principal in the firm of Geraghty & Miller, Inc., with our main office in Syosset, N.Y. I am a professional geologist with over 30 years of experience in the ground water field. I prepared a number of years ago the report to Congress on Waste Disposal Effects on Ground Water.

I have been asked today to present information on the cost and feasibility of various techniques available to clean up contaminated aquifers. I assume the reason for this is to compare the virtues of prevention versus restoration. I must preface my remarks with the statement that restoration of a badly contaminated aquifer to drinking water quality is seldom undertaken and rarely achieved. The majority of remedial action projects currently underway could be more accurately characterized as containment programs. These programs result in partial cleanup, but almost never in the restoration of the aquifer, if it has been contaminated by man, back to its original state.

Most projects that are undertaken to clean up contaminated ground water begin with removal of the source of contamination, if possible. Sometimes that isn't possible, that is, if you have a very large landfill, urbanized, or industrialized area that is slowly leaching contaminants to the ground. The next step is usually a hydrogeologic investigation to determine the extent of the contamination. This is followed normally with some action to monitor or limit the spread of contaminated ground water.

As I mentioned before, I was asked to comment on costs of cleanup. These are very site-specific, as you can understand, because, as was explained by our last witness, the geology of the country is complex. It differs from place to place, and the factors involved in cleanup are very dependent on the local geologic and hydrologic conditions, and the source and type of contamination you are dealing with. But I will give ranges of costs.

The hydrogeologic investigations I mentioned as part of the cleanup program range anywhere from $25,000 to $250,000. These are the investigations that are done to determine the extent and severity of the problem. If there is litigation, and usually there is some litigation involved, eventually the cost of these investigations can be as much as one-half a million dollars.

The attempts that have been made to clean up individual plumes of contaminated ground water from a lagoon or a landfill or a spill, have cost a minimum of one-quarter of a million to one-half a million dollars. I would say the average cost of trying to restore an aquifer system, contaminated by a single pollution source, back to its initial condition, would range from $5 to $10 million per site. This includes some sort of a system of containment and a long-term pumpout and treatment operation. Completion can take decades. Maintenance costs in some of the cleanup operations we are involved in exceed $100,000 per year.

Once you get involved in trying to treat a community water supply at the wellhead in order to return contaminated ground water to some usable form, costs range from $1.50 to $4 per month per family served. In a lot of cases, this would amount to at least a doubling of the cost of water.

Containment techniques available today are primarily suitable for individual pollution sources rather than areal aquifer contamination problems. You can try and put in some sort of a subsurface physical barrier to prevent ground water that is contaminated from migrating from one place to the other. This involves construction of underground slurry walls, concrete walls, sheeting or low-permeability barriers. You can also use wells to modify the flow system. Probably the most common containment method is installation of a number of wells to recirculate or otherwise modify the ground water flow system.

There has also been some research in a few instances, in methods of immobilizing contaminants in place in the geologic formation by injecting chemicals or biological substances into the contaminated area.

The technical limitations to all these processes are attributable to the complexity of ground water systems. Aquifers can consist of relative permeable sands, mixed layers of sands and clays, fractured bedrock or solution cavities in soluble rock. It is almost impossible to try to modify the flow system in the latter instances, or to inject large volumes of chemicals for in-place treatment. In essence, no single containment method is universally applicable. There may be some situations in which no method is cost effective.

Cleanup operations can also have adverse secondary impacts. In some pump-back schemes where wells are pumped to prevent the contaminant from migrating to a community supply you can end up drying up the well you are trying to protect. You may have to pump too much water to reverse the flow and accomplish the containment.

If you are talking about actual aquifer restoration, then you are talking about taking a lot of contaminated water out of the ground. treating it, and putting it back. As I mentioned before, most ground water treatment is now being done to restore the water for use as a community supply. Primarily due to the high cost of treatment, this approach is rarely employed for treatment of the aquifer itself.

The other problem with trying to pump the water out, treat, and put back is you are dealing with large volumes of ground water and a process that takes decades to complete. There is very little return on the investment.

What we can conclude from all this is the bill, S. 2131, under consideration by this committee which is directed toward prevention and protection rather than cleanup after the fact, is an excellent use of Federal funds. For many years I have advocated comprehensive water quality planning and preventive controls as the most effective means of protecting drinking water supplies. The bill correctly identifies land acquisition and land use controls in critical recharge areas as essential components of aquifer protection. What you do to the land is what you do to the ground water.

This is very similar to the 208 effort that was carried out and is still being carried out to some degree under the Clean Water Act. Many effective ground water protection projects have already been initiated by State and local governments under funding provided through section 208. While some criticism has been leveled at the 208 program, I wish to call your attention to the innovative approaches and effective local actions which have been fostered through this effort. The local efforts which would be supported by a bill such as S. 2131 include adopting local health ordinances controlling underground storage of gasoline and obtaining voluntary compliance with agricultural best management practices. You asked about agricultural practices before. Nebraska, for example, is experimenting with using high-nitrate ground water for irrigation with or cut down the use of commercial fertilizers which has created the nitrate problem. They are also looking at taxing the use of fertilizers to help pay for water quality management programs and provide an incentive to cut down on use of fertilizers. So there are best management practices going on in the agricultural field. Some of these efforts are also directed at developing comprehensive water management strategies on a State level, and also carrying out monitoring on the State level.

In conclusion, I would encourage any Federal efforts to provide funding and support for a continuation of this kind of ground water protection program at the State and local level.

I have a packet here describing some of the 208 prototype ground water projects that are underway on the State and local level now. You might be interested in looking at those.

Senator **Gorton**. Yes, I would be interested in that.

When you are consulted on a groundwater problem, who typically foots the bill?

Mr. MILLER. Well, typically the bill is broken down into two parts. In some cases the water supplier foots the bill because you can't always identify who caused the contamination in the first place. He ends up replacing the well supply. In fact, what typically happens is that a contaminated community supply well is abandoned and a new water source is sought. In some ways the one who has been polluted to a great degree foots the bill for contamination of the aquifer. If the contamination is obviously related to a particular source, such as an industry or a municipal landfill, for example, the operator of the source may ultimately pay for some or all of the damages. There also is a great deal of money spent by the Federal Government in monitoring what is going on and by the States in carrying out enforcement actions. In the long run everybody foots the bill, not just the polluter.

Senator GORTON. Do the local governments usually have the resources to address ground water problems?

Mr. MILLER. No, they do not; neither the financial resources nor the manpower, least of all the trained personnel.

Senator GORTON. You included in your statement the proposition that 208 funding was a program that enabled a lot of local governments to develop solutions to ground water problems. What have we learned from that program which is relevant to future protection efforts?

Mr. MILLER. Well, I think one thing we have learned is what can be accomplished on the local level, particularly through public education. On Long Island, for example, the 208 was directed toward a zoning approach which, for the first time, zoned the aquifers of the island. Long Island is an area where we pump 4 million gallons of ground water a day. Three million people are dependent on ground water. After all these years of use of the ground water supply, the 208 plan led to the first recognition of how important the flow system was. We have developed a ground water management program for the island that tells people where they can carry out certain activities on the basis of its impact on ground water quality.

Senator GORTON. On page 2 of your testimony you point out that containment feasibility is pretty severely limited below 100 feet, and yet it is obvious that many parts of the country pump water from a greater depth than that. Are you suggesting that as deep aquifers below a 100 feet become contaminated, there may be nothing we can do to decontaminate or control pollution, or at least what we do will be extremely expensive, perhaps not cost effective?

Mr. MILLER. What I was referring to on page 2 was the use of physical barriers, putting in a slurry wall or some sort of a physical barrier. They become too expensive and difficult to monitor and difficult to install below a 100 feet. But as far as protecting deeper aquifers in general is concerned, they are more difficult to protect simply because of their size. The deeper zones normally used for community supply are very large systems where it is difficult to contain contaminants or direct them to another area. We have some plumes in this country of contamination that are thousands of feet long, hundreds of feet wide. They represent tens of millions of gallons of contaminated ground water, and the pumping system you would have to develop to treat and remove those contaminants becomes a very large investment.

Senator GORTON. Do you anticipate the technology will be developed in the future to make aquifer cleanup economically and more technically easier?

Mr. MILLER. No; I don't think this field can rely on future technology to solve the problem. The physics of ground water, as has been mentioned before by the earlier witness, are understood pretty well. Aquifer cleanup by today's technology or tomorrow's would require a great deal of energy and financial commitment. I do not see any great breakthrough that would make ground water contamination problems easier to solve than to prevent.

Senator GORTON. So we have got to prevent it from happening in the first place.

Mr. MILLER. Right.

Senator GORTON. Senator Stafford.

Senator STAFFORD. Well, on that note, Mr. Miller, did you hear the previous testimony?

Mr. MILLER. Yes; I did.

Senator STAFFORD. Would you agree with the ranking of the sources of contamination that was presented earlier, that is, somewhat to my surprise, septic tanks were the principal or largest single source of contamination?

Mr. MILLER. A lot of that ranking came from some of the work I did years ago, and you have to understand what the ranking was based on. The rating curve was a mix of volume versus areal extent and toxicity. Now you can't use that ranking to determine how you should direct regulations or use your money. What it was was an indication of the various problems. We have about 19 million septic tanks and they are discharging a great volume of water——

Senator STAFFORD. Would you repeat the number?

Mr. MILLER. About 19 million. That is a lot of septic tanks, and that is a lot of wastewater. We have noted that in a lot of areas where they are using organic chemicals for septic tank cleaners it is not just domestic waste we are concerned about. So you would rank them high simply because of the mass. But if you were going to start regulations in any particular area, you would have to make a risk analysis and look at what the priorities are in that area.

Senator STAFFORD. Thank you, Mr. Chairman.

Senator GORTON. Senator Moynihan.

Senator MOYNIHAN. Thank you, Mr. Chairman. I am sorry I was late. As you know, we have a constitutional amendment on the floor.

Senator GORTON. I am very much aware of that.

Senator MOYNIHAN. We are honored to have Mr. Miller here who is a widely recognized authority on the matter, and a New Yorker to boot. I wonder if I could just ask you—if you are not prepared for this particular question feel free to say so because we didn't tell you in advance I would be putting this question to you—but you are from Nassau County on Long Island and you sit on that aquifer which I think it is the Nation's largest, or the one the most people depend on.

Mr. MILLER. That is right.

Senator MOYNIHAN. As you know, we have legislation before this committee that would involve the Federal Government participating with State and local governments in setting aside certain catchment areas for aquifers which are still pure, in the desire that they stay so. We had some rather striking testimony from the county executive in Suffolk County, which is the most eastern county on Long Island, that the ground water that people are drinking in Long Island today fell as rain 50 years ago. It is a long way down, and what is coming down today may not be as pure as that which fell one-half a century ago. I wonder if you had any comment about that legislation? Our feeling, those of us who are supporting it, think this is a small measure of prevention that might be taken to prevent irreparable damage. When an aquifer goes, I do think for all practical purposes it does go, does it not? And should we not think ahead on those matters?

Mr. MILLER. If you weigh the advantages of prevention versus trying to back up and clean something up later on, you have to go with prevention, because we are dealing with a system, as you say, that works very, very slowly. Some of the contaminants we are finding in some of the deeper wells in Long Island, the ones that are several hundred feet deep, were contaminants that were thrown away 20, 30, or 40 years ago. That is very true. To try and get those out of this giant system that we have down there is an impossible task. We don't have the funds. We can't pump that much because we dry up the water districts that are already in operation. The only approach that we really have on Long Island to insure a long-term future is to protect areas like the Pine Barrens and others areas we know recharge a deep flow system. We know recharge is absolutely essential to the long-term life of that system. The recharge area needs to be protected through land use. If you don't control your land use and recognize what activities can contaminate or affect ground water in critical areas, then you can't win.

So what I am saying is the bill and the idea to do land use planning, to support land use planning to support ground water management as a preventive device is the only way to go if you are concerned about long-term ground water quality.

Senator MOYNIHAN. Would I be correct, sir, that there are parts of Long Island in the western area, towards Syosset, where the previous depths at which pure water was to be found is no longer the case, and at 700 feet you are finding contaminants?

Mr. MILLER. That is true, there are certain areas in the deep flow that were not recognized as critical recharge areas in the past that have been literally lost from the standpoint of being able to use them for public water supply forever.

Senator MOYNIHAN. This is not a matter confined to one county or location.

Mr. MILLER. No, you only have to read the newspapers. It is something quite common. If you look at aquifer systems, there are some areas more critical to protect than others. That is something we have not recognized, it has not been recognized on a broad scale in the past.

Senator MOYNIHAN. Generally speaking, and it has to be a general statement, this is a nationwide condition.

Mr. MILLER. It is a nationwide concern. Sometimes the problems of ground water contamination get blown out of proportion, but certainly it should be a concern. The time to act is now while we can protect these areas that are critical.

Senator MOYNIHAN. Thank you very much.

Thank you, Mr. Chairman.

Senator GORTON. Thank you, Mr. Miller. You have been most helpful to us in our proceeding.

The next witness is Mr. Fox from San Antonio, Tex.

STATEMENT OF THOMAS P. FOX, GENERAL MANAGER, EDWARDS UNDERGROUND WATER DISTRICT, TEXAS

Senator GORTON. Mr. Fox, you may proceed. Your entire statement will be included in the record. So if you will summarize, we will be most appreciative.

Mr. FOX. My name is Thomas Patrick Fox. I am general manager of the Edwards Underground Water District located in San Antonio, Tex.

I was asked to addres four areas primarily, those being the Edwards Underground Water District experience in protection efforts, obstacles encountered by the district, the desirability of Federal technical and financial assistance, and the Edwards Underground Water District's position on existing and proposed Federal laws.

As you have said, I have submitted my written testimony and I will try to briefly summarize that material.

In Texas, as you might have noticed, ground water is one of the most valuable and important resources. Approximately 70 percent of the water used in Texas is ground water. One of the State's most unique ground water systems is known as the Edwards Aquifer. And many times in the past we have laid claim to being the aquifer that is supporting the largest number of people. I guess that was before Long Island discovered they had ground water. We have over 1 million people that rely on the Edwards Aquifer for municipal, irrigation and recreational needs. That recreational needs basically refers to maintenance of the spring flows, an important thing in south Texas.

This resource is considered to be so important to a five- county area in central Texas that in 1959 they submitted legislation to the State legislature to create a ground water district. That was done without any 208 money or without any Federal or State mandate to create such a district. The people then voted upon a tax. They taxed themselves to be able to fund this district and for it to carry out its function.

The basic functions of the district are to conserve, protect and recharge the Edwards Aquifer.

Some of the actions that we do that involve protecting the water quality involve a cooperative program with the U.S. Geological Survey. We are a direct cooperator with the Survey. We have a large-scale monitoring program throughout this area. This area is 150 to 170 miles long. We have over 70 wells that we use for monitoring purposes. We also monitor the water that is entering the Edwards Aquifer on a continuous basis. So that we have this program that is intended to provide assurances of the quality of the aquifer.

Some of the activities that have resulted in some other kinds of protection measures include that, in about 1969, the State of Texas banned burning of garbage. This led to a search throughout the area for landfill sites. So the district, in cooperation with the State department of water resources, then the Texas Water Quality Board, developed a set of rules for the protection of the Edwards Aquifer, primarily the recharge zone. These rules addressed septic tanks, they addressed conversion to organized sewage collection systems, they also addressed landfills. Landfills and chemical waste dumps are, while not expressly prohibited, they are extremely strongly discourged in the recharge zone of the Edwards Aquifer. So they are a set of rules that get at protection from the State ban, protecting water quality.

Some of the concerns that were addressed earlier with regard to septic tanks, petroleum exploration, landfills, and agricultural activities I would like to just mention briefly.

As far as agricultural practices in the Edwards Aquifer, there are very little that affect the recharge zone or recharge water quality, so that is not a concern. However, septic tanks was an initial concern in the early days when we were beginning the program in the district. From the evidence that we have had in our monitoring program, it appears that we can't find evidence of septic tank degradation in this particular aquifer. There have been occasions of contamination of individual wells. This points to one of the more important problems, that is, poor well construction by individual land owners. Typically, if a well is poorly constructed, you get direct communication from a septic tank

Another area of concern we have over the past 2 years is increased price of oil and gas has caused an increase in oil and gas exploration in our immediate area. We have talked with some of the area's drillers. We have also met with the Texas Railroad Commission who has that responsibility for monitoring these oil and gas operations, and they have worked with us in a cooperative effort to see that the requirements are carried out in the immediate area of the Edwards Aquifer.

Landfills, as I said earlier, the rules generally speaking discourage any kind of a landfill to be located in the recharge zone of the Edwards Aquifer.

One of the things with regard to septic tanks is that we have a land requirement of 1 acre per septic tank. So this has a tendency to discourage septic tanks, but it also gets at density problem with septic tanks. The higher the density, the more likely you are to have a contamination problem.

One of the other activities of the district involves recharge. We do have a recharge program that we try to put more water into the aquifer. These are through natural recharge points. I have brought a booklet along that I sent copies to you we, the district, in cooperation with the local university have prepared that is used in junior highs for the purpose of educating the people about their resource. Our problems typically are of a quantity orientation rather than a quality. So we encourage the conservation of that resource.

Getting to some of the other questions, obstacles or constraints that we have encountered through the years, possibly one of those is that in Texas the landowner effectively owns the water beneath his property. This has resulted in a situation that most people are not in favor of any additional rules, and the creation of the Edwards District was created without any rulemaking authority. However, what has happened as a result of that is that a much greater effort in finding ways to solve these problems cooperatively, and this gets to what I said earlier, working with the local water quality board personnel, the Railroad Commission, the other agencies, including the U.S. Geological Survey, we management to come up with programs, efforts that get at protecting the Edwards Aquifer without necessarily having to have rules in place. However, those rules that do exist have caused those people to want to work in greater cooperation, there is no question.

The desirability of Federal technical and financial assistance, I think that, as was stated earlier, the USGS is a prime example of how a local district can work with a Federal agency. We have an annual contract with the USGS for monitoring, and I think it and the Soil Conservation Service are two great examples of how local and Federal agencies can work together.

Beyond that, I question the need, for example, for our area for any additional Federal involvement. While we recognize that there are parts of the United States that ground water has been and continues to be contaminated, people in our area have been working to protect water quality. The water quality of the Edwards Aquifer has not been degraded, nor do we want to see it degraded. Our position is effectively that of the other speakers so far. We believe that prevention is the best way to protect an aquifer. It is the opinion of the Edwards Underground Water District directors that there is no significant need to enact Federal laws for the specific purpose of developing comprehensive management plans for the protection of critical ground water recharge areas. Such protection is the responsibility of the local and State governments. And if a problem exists that requires resources beyond the capability of local and State governments, then there are existing Federal resources available such as the USGS co-op programs.

I believe I will stop at that point.

Senator GORTON. Your Edwards Aquifer was the first EPA-designated sole source aquifer. As the first such designated aquifer, has this designation helped or hindered you in your ground water protection efforts?

Mr. FOX. I frankly don't see that it has made a whole lot of difference in any of our efforts.

Senator GORTON. It is neutral, in other words, at this point?

Mr. FOX. Neutral.

Senator GORTON. You have made a great deal of progress in addressing underground water quality. What is your secret? What lessons do you have for others?

Mr. FOX. Well, I think a lesson that can be learned is that it can be done and it can be done over a period of time. It may take some time, but it can be done if the people, the local community, perceive that there is a problem and are willing to tax themselves.

I have just been through two hearings, where one of them was the creation of an underground water district in Texas where the people were willing to create a district, to tax themselves, and another set of hearings that we were sponsoring to talk about the quantity problem, and that these people were willing to increase their taxes or find other ways to solve that quantity problem.

Senator GORTON. Following up on that, does the fact that you have published a brochure and make extensive attempts to reach your own public indicate your view that public awareness and education is the key to success?

Mr. FOX. I think that has been stated many, many times in the history of the district, that public awareness and public education are the critical factors. The more the people understand and are aware, then the more help you are going to get from the public.

Senator GORTON. You take the position that ground water protection efforts should be primarily taken by individual local communities. Does this have the disadvantage of placing a community which does a responsible job in this respect at a competitive disadvantage to a neighboring or even a distant community which is going to let tomorrow worry about itself and ignore problems now?

Mr. FOX. I suspect that has more to do with the type of ground water system. For example, our district encompasses the majority of the Edwards Aquifer. While large in some respects for an individual limestone system, it is not necessarily that big. So that those things that are required to cover the entire system, I don't think it is creating any competitive disadvantage in the San Antonio area, because the population is increasing quite rapidly. So that doesn't seem to have had an effect.

Senator GORTON. Has your district found it necessary to prevent or restrict growth or economic activity in protecting ground water?

Mr. FOX. Not at this time. I think that what we are looking at again is through a series of the studies that we are carrying out with USGS on urban runoff; there may be some factors that relate to construction activity, just construction alone not necessarily after-it-is-built type of activity. But I don't know that that will restrict growth. There are things we do not want to see on our recharge zone. We don't want to see warehouses for storage of hazardous material. The thing that is important there is the fact our district exists and the fact the people are aware of it makes people less likely to put them there and more likely to go along with that.

Senator GORTON. S. 2131 lays out a detailed process for designating special protection areas within a sole source aquifer and developing plans to implement them. Do you feel from your reading of that proposal that the designation process adequately protects local decisionmaking authorities?

Mr. FOX. Well, I think that basically what it says is that any municipality within that area can petition to the Governor, and that means that, for example, a small town of 200 people could petition to the Governor and if he was so inclined he could approve that, where in our area it may not be necessary to go through all the steps that the plan outlines in order to come up with a plan. I think the basic point we are trying to make is it can be done on a local level and should be done on a local level, and we question that there is any need for any Federal support at all.

Senator GORTON. You do oppose this probably because it would dictate management plans, among other things. Is your primary objection that the elements which would be included in a management plan are too restrictive or we would have too much Federal intervention in the local process, or simply that the facilities and the ability is there in almost all local communities to do this on their own?

Mr. Fox. Let me see if I can start from the bottom and work up. The facilities and abilities are not necessarily there right now, but they can be made available over a period of time. Also, there are people that are willing to work on them.

The concept of restrictions, the Federal restrictions, the Federal involvement I think is one that is bothersome, that the plan, as outlined, says that these aquifers have more consistency than is in reality true. Each one of them is different. There are certain elements in the plan that have to be addressed. So I have the question of whether or not those things can really apply to every aquifer or should be applied to every aquifer.

Senator Gorton. You state in your written testimony that S. 2131 may well result in the expenditure of funds in cases where expenditures simply aren't needed. Is this objection grounded on the fact such problems are not particularly severe or there simply isn't an appropriate selection criteria in S. 2131 to assure communities with the most serious needs will get the most funding?

Mr. Fox. I think part of the problem is when you make money available, matching money, that there will be an inclination for a community to go for that money; whether they have a real need or not, that inclination still exists. Therefore, it is our feeling that you have increased spending where in some cases, the Long Island situation, it may need to be spent there, but it could also be raised on the State or local level.

Senator Gorton. Senator Moynihan.

Senator Moynihan. I would like to congratulate Mr. Fox on what he and his associates in those five counties have been able to do. Is that largely an agricultural area?

Mr. Fox. The areas to the west are predominantly agricultural. The central portion is municipal, the city of San Antonio, and the areas to the east are beginning to be more of a bedroom community to San Antonio, but because of the Edwards Aquifer and relating spring flow they are tourist-oriented communities.

Senator Moynihan. So it has a characteristic of that south central Texas which is different from Ohio, you might say.

Mr. Fox. Yes, sir.

Senator Moynihan. You said S. 2131 may not mandate participation, which of course it doesn't, but its provisions will, in all probability, however, result in the expenditure of funds in cases where there is no real need. If you sort of remove yourself from your present role, if you had to make a bet between the cost of spending some money on aquifers where it wasn't needed as against the cost of not spending money on aquifers where it is needed, which side would you come out on?

Mr. Fox. I would come out on the side of trying to prevent the contamination. I agree with that completely. I think that what we are saying is there is a mechanism that we have offered in the last couple of years to insure what we can do or can't do. There is a mechanism on the local level that can result in protection of ground water systems.

Senator Moynihan. All I would respond to you, Mr. Fox, is to say that you may be under the illusion that everybody in this country is as capable of looking after their resources as Texans are, or Texans in the Edwards Aquifer.

Mr. Fox. We don't have everything sewed up. We do have problems, there is no question.

Senator Moynihan. I do congratulate you for what you have done. But I do note if you had to take the risks of doing more than you had to as against less than you had to, you would risk doing more than you had to. Anybody in your profession just has to know how irreversible the loss of these aquifers can be, and that is what, of course, concerns our committee. I thank you very much for your testimony. It is very illuminating and very precise.

Senator Baucus is here.

Senator Baucus. Mr. Fox, what problems are there within the district? What about competing conflicts? How are those resolved? First outline what the major ones are, and second how they are resolved, and third whether any of those conflicts result in litigation.

Mr. Fox. There is a fairly significant competition that is centered around the quantity of water, the water availability. There are the interests, as I said, of agriculture, the municipal, and the recreational. The way the Edwards Aquifer operates or can be operated, you can pull it down below its—you can mine it. We can begin to mine it. We are not mining it at this time, but you can if the demand increases beyond its ability, the average annual recharge. There are areas because of the State law, because of the way the law is written or its interpreted case law, the English law that the owner owns the water, the absolute right of capture is the correct way to state it, that he can take and use for his purposes all the water under the property as long as he doesn't waste it, and that has caused a series of conflicts. We are right now in the process, as I mentioned, in a series of forms to try to find out if there is not some way we can go beyond other steps that have attempted to be taken, development of additional surface water, to supplement the Edwards Aquifer.

Senator Baucus. Any litigation yet?

Mr. Fox. No.

Senator Baucus. Any prospects?

Mr. Fox. There are always prospects.

Senator Baucus. I know, but any serious?

Mr. Fox. There is some litigation. The Edwards district is currently involved in litigation that deals with that, but that involves the Endangered Species Act. But the conflicts are more of who is going to pay and what community, what area, whether it has been the municipal or the other people sharing in the costs of these surface water projects.

Senator Baucus. I guess the basic question is the degree to which these conflicts tend to mitigate against some of the successes of the district. Are they bogged down decisions and just cause ill will, or is it a problem? That is what I am trying to find out.

Mr. Fox. It has, but I think we are trying to move beyond that right at this stage. There are several things happening in Texas. The Texas water plan is being revised and that may make some changes with respect to ground water law and other things.

Senator Baucus. I'm sorry, I couldn't hear that.

Mr. Fox. There are some changes going on in Texas, and that could include changes in ground water law, which is causing maybe a little bit more of a coalescence of the people in the Edwards aquifer area. They are willing to work together.

Senator Baucus. Just briefly, what are those changes in Texas law?

Mr. Fox. There aren't any yet.

Senator Baucus. Proposed changes.

Mr. Fox. Well, not even to the proposed stage, but there are changes. The policies of the State with respect to water are being examined, and it could result in changes in ground water law in Texas.

Senator Baucus. I don't want to get into this too deeply, but if you could in a sentence or two describe the changes in policy.

Mr. Fox. They could involve regulation of the amount of withdrawal of ground water. They could go to that extent.

Senator Baucus. OK. thank you very much.

Senator Moynihan. Just to clarify in my mind what Senator Baucus asked, the idea you have a right to the water under your property is a common law right that predated the deepwater well, and I assume that on your aquifer you don't let people just dig wells and pump as much water as they possibly can.

Mr. Fox. That is the law of Texas.

Senator Moynihan. OK, we are going to see a lot more of you back north sooner than you think. Thank you very much, Mr. Fox. It is very helpful of you and kind to come.

Senator Baucus [presiding]. Next we will have a panel consisting of: Mr. Thomas Burke, New Jersey Department of Environmental Protection; Mr. Robert Moore, Connecticut Department of Environmental Protection; and Mr. Clint Whitney, California Water Resources Control Board.

Gentlemen, if you would summarize your testimony, we will start with Mr. Burke.

STATEMENTS OF THOMAS BURKE, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION; ROBERT MOORE, CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION; AND CLINT WHITNEY, CALIFORNIA WATER RESOURCES CONTROL BOARD

Mr. Burke. Thank you. I am Thomas Burke, director of the Office of Cancer and Toxic Substances Research of the New Jersey Department of Environmental Protection. My office is the research arm of the toxic substances control efforts in the State of New Jersey. My testimony today will be divided into two parts. First, I would like to present an overview of 4 years of research on toxic contaminants in New Jersey's water. I would then like to address a number of issues raised by proposed amendments to the Safe Drinking Water Act.

In 1975, the National Cancer Institute released statistics revealing that for the period 1950–69 New Jersey led the Nation in overall cancer mortality. This prompted an aggressive multidisciplinary program to evaluate the State's cancer problem, which included extensive research and monitoring of citizen exposure to toxic and carcinogenic pollutants in the environment. The goals of this research are: Increased knowledge of the extent and sources of toxic pollutants, improved regulatory and enforcement efforts to reduce exposure, and a better understanding of the effects of these pollutants on human health.

A major part of this research has been the extensive monitoring of the State's water. This includes statewide testing of our ground, surface, and drinking waters for a wide range of toxic pollutants. I would like to give a brief overview of our results. In presenting these results I would like to stress that they are not unique to New Jersey, but are indicative of a national problem. They clearly indicate the sensitivity of our water resources, and the need for a strong national policy to safeguard human health.

Fifty percent of the Nation and 60 percent of New Jersey receives its drinking water from underground sources. Historically, we have assumed ground water to be purer and safer than drinking water from surface supplies. Recently, however, we have learned of the sensitivity of ground water to irreversible contamination by industrial chemicals. In New Jersey we have tested over 1,000 wells statewide for organic compounds, pesticides and heavy metals. These tests revealed the presence of low levels of these contaminants in virtually all areas of the State. Seventeen percent of the initial 670 wells tested contained 1 or more of 8 volatile organic compounds at concentrations above 10 parts per billion. Five of these compounds are suspected carcinogens. About 3 percent of the wells in the study contained these compounds at concentrations exceeding 100 parts per billion. A number of instances of pesticide and heavy metal contamination were also discovered. It appears, however, that the greatest threats to ground water are the halogenated volatile organic compounds. This is due to the combination of their widespread use, relative ease of movement, resistance to breakdown and potential cancer-causing effects. The results of our research are presented in the report "Toxics in Groundwater" by Dr. Robert K. Tucker, who is accompanying me here today.

We have also conducted extensive monitoring of our public drinking water supplies, both surface and ground, for the EPA list of 129 priority pollutants. In addition, as part of a national study of the relationship between drinking water quality and bladder cancer being conducted by the National Cancer Institute, we have tested every purveyor serving over 1,000 people for a list of 10 volatile organics.

The results of these tests are sobering. The majority of the finished drinking waters contained low levels of potential cancer-causing volatile organics. While many ground water supplies contained traces of industrial solvents, the greatest threats to surface supplies are the volatile organic trihalomethanes which are formed by the combination of chlorine with naturally occurring organic material during the chlorination process. Several large public supplies were found to have levels of trihalomethanes exceeding 100 parts per billion, the current EPA standard.

The results of our investigations clearly indicate the sensitivity of our water resources to the threat of chemical contamination. Evidence of toxic contaminants was found in urban industrialized areas as well as the most rural parts of the State. Potential sources range from abandoned hazardous waste sites to individual homeowners' septic systems.

Our responses to specific incidences of contamination have been as varied as the potential causes. In some instance we have closed individual domestic wells, requiring homeowners to hook up with municipal suppliers. Other times we have initiated major enforcement of cleanup activities to remove potential contaminants. In many cases we have worked with local authorities to determine the most appropriate courses of action which often include long-term monitoring, improved treatment or development of a new source. All of these responses are extremely costly and have been hampered by the lack of Federal standards for toxic contaminants.

By far, our most effective long-term response to ground water contamination is prevention. Through the New Jersey Solid Waste Management Act and Federal Resource Conservation and Recovery Act, we have initiated aggressive programs to control the improper discharge and disposal of hazardous chemicals. We have developed a program to identify and clean up abandoned hazardous waste dump sites which is supported by the New Jersey Spill Compensation and Control Act, the 1981 Hazardous Discharge Bond Act, and the Federal Comprehensive Environmental Response, Compensation and Liability Act. In addition, through the development of a State water supply master plan we have identified sensitive recharge areas and watersheds to facilities the protection of critical areas.

This threat of chemical contamination of drinking water is not unique to New Jersey, but a growing national concern which must be addressed with the preventive approach of a strong Safe Drinking Water Act. To insure the safety of the Nation's drinking water we must aggressively pursue research on the human health effects of toxic contaminants; we must move to protect our sensitive watersheds and recharge areas; and we must continue to develop and assess treatment technologies to efficiently and effectively remove toxic chemicals from our water. Most importantly, enforceable standards must be developed to provide guidance to consumers, purveyors and regulators and prevent any adverse effects to the health of our citizens.

I would now like to address four specific issues raised by the proposed amendments S. 1866 and S. 2131.

Concerning the question of risk or adverse health effects, New Jersey has taken the prudent approach of minimizing or eliminating citizen exposure in the absence of documented health effects data. We believe in this conservative approach and therefore urge that the original preventive language of the act be preserved.

As far as treatment technology, the establishment of safe standards for chemical contaminants is a complex and difficult task which is complicated by the many thousands of potential pollutants and their potential synergistic effects. Currently, the Safe Drinking Water Act authorizes the Administrator to prescribe a particular treatment technology in cases where setting a maximum permissible contaminant level is prohibitively expensive or technologically impossible. S. 1866 would eliminate this authority, in effect reducing the Agency's ability to address a threat to public health. In specific instances, the use of broad spectrum treatment may prove an efficient and economic alternative to addressing individual pollutants. Concern has been voiced that the opportunity for overregulation is too available and that the existing regulations may not always result in cost-effective solutions to specific contamination problems. We feel, however, that a cooperative and open dialog between EPA, the water purveyors, and the affected customers will enable the regulatory process to operate in an equitable and effective manner. With proper supportive regulations to insure that proposed treatments are practical and implementable, we feel that this authority should be preserved.

An example of the proper use of this authority is the current ground water contamination situation in Atlantic City. Presently, the Atlantic City well field is threatened by a soup of toxic chemicals from an abandoned hazardous waste site. Rather than attempting to monitor and control individual chemicals, granular activated charcoal treatment was chosen. Should the monitoring wells indicate an impact from the dump site, this treatment will be employed to remove a broad range of contaminants and protect consumers from potential harmful effects.

Undoubtedly there are countless other instance nationwide where broad spectrum treatment technologies could be efficiently employed. We therefore believe that this tool should continue to be available to the Administrator.

In New Jersey many of the problems concerning the quality of public water supplies are commonly associated with small water treatment systems. The granting of variances or waivers from standards on the basis of economic hardship would tend to prolong an acute existing problem. Public health risks to individual consumers remain the same regardless of the size of the supplier. Many of New Jersey's smaller water companies rely exclusively on ground water supply, and because of our problems with aquifer contamination it is these companies that may be most vulnerable to contamination by toxic compounds. As a demonstration of our concern, New Jersey has a law that permits the Department of Environmental Protection to order small water companies to combine with larger ones in order to improve quality and operation. Rather than waivers permitting the violation of standards, small companies should be given incentives to upgrade.

We commend the efforts of Senator Moynihan and agree with the intent of S. 2131 to protect sensitive recharge areas. However, we feel that greater benefits and protection could be derived if the protective efforts are expanded to include all water sources. The concept of sole source has caused problems and misunderstanding in New Jersey. In the coastal plain, which constitutes the southern half of our State, we have a layer aquifer system. If an upper aquifer is contaminated, it is argued that we can simply sink wells deeper into a lower aquifer. While there is now some advocacy for treating this whole system as a single "sole source," this interpretation may not prevail under the law. Yet all of these aquifers are critical in providing drinking water to New Jersey's citizens. The State should be encouraged to develop detailed plans for mapping important aquifers and watersheds and initiating programs to encourage appropriate local zoning for prudent land management in critical areas. Only a small proportion of the Nation's drinking water reserves would fit the definition of "sole source." To insure maximum protection of our resources, all sources should be afforded equal protection.

I want to thank you for this opportunity to be part of your review of the Safe Drinking Water Act. I feel that the work we have done in New Jersey clearly indicates the need for a strong national effort to protect our drinking water. By preserving the preventive approach of the act and urging improved implementation by EPA we can insure the maintenance of safe and pure water throughout the United States.

Senator BAUCUS. Thank you, Mr. Burke.

Mr. Moore.

STATEMENT OF ROBERT E. MOORE

Mr. MOORE. Mr. Chairman, Mr. Moynihan, protecting Connecticut's ground water for future water supplies and recovering or reclaiming those ground waters already lost to contamination is the major and most important water quality challenge of the State.

Forty-eight percent of Connecticut's 3,100,000 people rely on ground water for their water supply. Twenty percent rely on individual household wells for drinking water, though no routine monitoring is conducted to verify potability. The demand for ground water is increasing as requirements for increased treatment of surface supplies are imposed. Out of Connecticut's 169 towns, 78 have experienced contamination of water supplies within their boundaries in the last 5 years. By January 1982, over 350 wells had been contaminated from a variety of pollution sources, including home disposal of household chemicals and septic system additives, road salt, fuel and chemical storage, landfill leachate, and toxic and hazardous wastes. Sixty-five of the wells were public water supplies, the remaining private or commercial supplies. These wells were serving an estimated 200,000 persons. One-half of these problems have been resolved—primarily the public supplies—by development of new sources or treatment. Many of the private domestic supplies are relying on bottled water, home filters, or boiling. This problem increases daily as we monitor more and more landfill and industrial sites.

Control and abatement of these contamination problems has been carried out through Connecticut's Clean Water Act of 1967. Ground and surface waters are defined as waters of the State by the act and, unlike the Federal laws, all enforcement and permitting powers are the same. However, until 1980, the inseparable relationship between ground and surface water was not recognized in water quality policy, comprehensive planning, or standards for use of or discharge to our ground waters.

In September 1980, statewide ground water quality standards and criteria were adopted with the surface water quality standards revisions of that year, pursuant to section 25-54e of the Connecticut general statutes and section 303 of the Federal Clean Water Act. It was determined that a system of ground water quality standards paralleling the surface program would be workable and effective. These standards and subsequent classification system are the primary tool of the State to protect and manage its ground waters.

Classification of ground water could not occur without extensive data collection and plotting of a variety of information. I have submitted copies of that information to the staff of the committee. The primary assistance in that data collection was the U.S. Geological Survey in our cooperative agreement with them.

With that data in place, the next step was to map all waste water discharges to the surface and ground waters. With this data in place, we were able then to evaluate existing conditions and begin developing site-specific standards. These ground water standards not only protect water for drinking but also identify where discharges to surface and ground water would be acceptable. Connecticut's statutes requires that:

> These standards shall protect the public health and welfare and promote the economic development of the State and preserve and enhance the quality of the State's waters for present and future use for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, agricultural, industrial and other legitimate uses.

The discharge of waste water from industry, municipalities, homes, landfills, lagoons, and possibly hazardous waste storage and disposal are legitimate uses and, therefore, must be provided for in both surface and ground waters. We have recognized this critical but controversial conflict between water uses and have identified and mapped areas most suited for these uses as well as those areas best suited for water supply development.

The Department has adopted the following policy in these standards: It is the policy of the State to restore or maintain the quality of the ground water to a quality consistent with its use for drinking without treatment.

Senator BAUCUS. Mr. Moore, could you summarize your testimony because we have a big order ahead of us here.

Mr. MOORE. I think the general policy is to preserve the ground water quality. We do recognize the need for other uses of that ground water and have classified them as such. We, basically, have arrived at four classifications for our ground water throughout the State. They include those that are protected for water supply and development, both planning and existing. They include those areas that are generally protected for water supply but not in use for public supply yet. That covers most of the State. The third classification that covers those ground waters that are already contaminated by existing land use or disposal practices, or primarily land use. We have developed another classification where we say because of the unique hydrologic conditions of these sites, these are best suited for waste disposal areas in the State. Very few of those areas we have come up with in that category, but they are in fact there.

The policies and standards developed use requirements or limits would not control actual discharge. The discharges are controlled through out permit process. They also do not set value limits for chemical constituents, but refer to safe drinking water standards for those waters classified for drinking water.

Presently, about half the State is classified and maps have been adopted through a formal process. The other basins are all in the public hearing stages. It has cost us about 21 man-years since 1979 to develop this system.

To supplement these standards a variety of new laws were enacted this year. They include regulation and monitoring of underground fuel storage, prohibition of certain toxic septic systems additives or cleaners, and authority to require polluters to provide potable water to those affected by this pollution. That is the major bill this year. It also provides for grants to municipalities for providing water to persons where pollution sources are unknown. This is a major new act for us, and also the Water Diversion Act of 1982 which includes the requirements for permits for ground water withdrawal of over 50,000 gallons a day. So we are in the water allocation business.

We have encountered some obstacles, obviously, in developing the classification system. They include misunderstanding and concern about potential areas for waste disposal and monitoring. Monitoring is a big problem.

We feel that the role of the Federal Government should be that in encouraging the development of necessary State programs, for providing financial support, conducting ground water research, maintaining data systems. I think most importantly, however, the Federal Government should be in the business of research of the human health effects of toxic substances, and that should be accelerated to the highest degree possible.

Also, we recommend some kind of national ban on certain chemical additives be promoted to septic tank cleaning systems.

I think the various Federal laws pertaining to ground water should be reviewed within the scope of their reauthorization this year. I think that the Clean Water Act should be the primary vehicle for establishing ground water quality goals throughout the country and the objectives of the Safe Drinking Water Act and RCRA reflected in specific portions of those goals.

The implementation of our program and the management of our program is through water quality management basin plans required by 303 of the Federal act. Those documents prepared for implementation and management are very similar, if not identical, to those conservation and other management plans called for in S. 2131. They relate very closely to that bill.

Senator Baucus. Thank you, Mr. Moore.

The next witness is Mr. Whitney.

STATEMENT OF CLINT WHITNEY

Mr. Whitney. Suffice it to say that we provide in our written testimony some examples of the kind of ground water pollution evident in California. It repeats much of what you have heard from these other States and other witnesses today.

In addition, I would like to supplement the record with a report I brought with me which I supplied to your staff which details a number of other examples that might be helpful to them in their staff work.

I would like to digress from my written testimony to hit some related subjects as a result of listening to the previous witnesses on this panel.

First of all, California would agree with the testimony of the gentlemen here that the Federal involvement ought to be expanded beyond just sole source aquifers. In California, for example, what difference does it make if you have a supply that is the sole use of a 100,000 people or a vital use of one-tenth of 1 million people? We have a mixed supply system in California. We import waters for hundreds of miles, as you may have heard. So we think we must manage all of our ground water systems.

What we lack in many instances is the political will to do so. We certainly lack the resources to do so. But, in fact, if we are going to get on top of the ground water problem, we are going to have to have those resources and definitely the political will. I think the Federal Government can help significantly in that regard.

Mr. Moore explained basin planning under the Clean Water Act, which we have in California too, section 303. Those basin plans in a rare example address ground water adequately. It is a brand new field for we regulators in California. I am giving you the regulator point of view and not water supplier point of view.

From a regulator's point of view, when we find these examples of horror out there, the first question we have to ask ourselves is what do we do about it? We applaud the attempt you are making here in this legislation to prevent pollution and protect ground water basins. We believe that is the way to go. I believe the testimony you heard today consistently supports that.

For example, we have overdraft problems in the San Joaquin Valley. The gentleman from USGS testified to that. We have those overdraft problems, but it is not considered pollution. Those ground water basins are, nonetheless, put out of order permanently because of the subsidence and water quality problems. Yet we do not have management of those basins except on a very narrow and local basis. We regulators find it very difficult to go in there and make a case of pollution because who do we sue? Who do we go after? Who do we enforce against? In the case of a pumper, we can sue all pumpers of the ground water basin.

For example, we have a number of coastal areas that have sea water intrusion, that is, they are extracting ground water at a rate that invites the sea to permeate inland aquifers. We can stop the pollution by the methods you heard the technical experts talk about, but who do we sue? Who do we get to correct the problem, to pay for the problem?

So we have that kind of a dilemma ahead of us.

Toxic pollutants, industrial pollutants, virtually every place we look for them we find them. And as was earlier testified, about the best we can do is stop that pollution, contain it. We can't save those basins once they are gone. I think that is a point you should take very seriously.

I am scattering around here, hitting a number of thoughts. I am trying to give you a perspective of the spectrum we face out there.

Agriculture, 85 percent of the water used in California is used by agriculture. A large portion of that is ground water supplies. Agriculture generally takes the position in California, because we have imported water consistently over the years, that they need not manage their ground water, that is to say, they can mine their ground water, and the State has an obligation to ship other water supplies from other places which, as they use the term, is "wasted to the sea." So they want to build dams in the northern part of the State to ship to the Central Valley to sustain the agricultural community in that part and expand into new lands in the area. How do you address that problem?

I think the bills you have before you are important steps toward controlling those problems. It demands the State take steps to start doing some planning—land use planning, water management planning, in addition to its water pollution control planning. I think that while it may be defective in small ways that we could debate and argue, I think it is a significant policy step you are taking here.

I would like to end on one note, that is, what the State-Federal role and what some of the institutional problems might be.

We in California have a pretty strong State water pollution control law in addition to the Federal law that we have delegated to us from EPA. We feel we virtually have all the tools in terms of regulation. What we need, though, is management tools. You may have heard that the people have, through the initiative process, put a measure on the November ballot which is a ground water initiative, and it is a wide ranging demand, if you will, that we manage our ground water resources in basins. What it calls for basically is if local districts or entities overlying these basins do not coalesce, forming joint powers or sole powers or whatever device they want to use and come up with management plans that develop safe yield concepts, then the State will be empowered to come in and do it for them. I think that you should consider that kind of approach at the Federal level as well.

Senator BAUCUS. Thank you very much.

Mr. Chairman, I might ask one question.

Senator GORTON [presiding]. Go ahead and ask as many as you want.

Senator BAUCUS. The question that comes to my mind is we have heard about the seriousness of the problem as graphically presented by the gentleman from New Jersey, Mr. Burke, and second, we hear from you collectively and individually all saying that the State should take care of the problem, which leads me to the question why haven't States done a better job in preventing the kinds of problems we now have with ground water contamination? I would like each of you to address that.

Mr. Burke, since you did such a good job in outlining the problem, why don't you go first.

Mr. BURKE. Well, first of all let me say up until about 1976 we had no idea that there was any problem with ground water, and this has been probably a result of the tradition thinking that ground water sources are protected, and we focused our efforts on protecting our surface water, building sewage treatment plants, things in that direction. I think the work we have done in New Jersey to graphically indicate the problem was really the beginning that has defined it for us and that the States caught with this problem right now as a result have just begun.

Senator BAUCUS. You are saying you have recently discovered the problem?

Mr. BURKE. Yes.

Senator **Baucus**. Do you have the tools to remedy the problem?

Mr. **Burke**. Do we have the tools?

Senator **Baucus**. Yes.

Mr. **Burke**. As you may have heard, once ground water is contaminated I don't know if the tools are available there for taking care of the problem.

Senator **Baucus**. What about prevention?

Mr. **Burke**. For the years following, we have to go ahead with the preventive approach. We have initiated a lot of State programs to do that.

Senator **Baucus**. Do you have sufficient State authority to implement such prevention?

Mr. **Burke**. I would say that with the existing State authority we have the authority to do that. We don't have the resources within the State to attempt that.

Senator **Baucus**. I don't know any State yet that thinks it has the resources. I want to know whether you think you have the authority.

Mr. **Burke**. I would say under the State's Safe Drinking Water Act we have broad range authorities.

Senator **Baucus**. Could both of you gentlemen address those questions?

Mr. **Moore**. I think in terms of why we haven't done anything sooner is, one, it is hidden under the ground for one thing, and, two, we didn't measure for a lot of things we are finding today as toxic substances until recently, within the last 3 to 4 years. I think a lot of those problems were management problems and not direct discharge water problems. We didn't have the stinking smelling water bubbling out of the ground.

Senator **Baucus**. Do you think Connecticut has sufficient authority?

Mr. **Moore**. Yes.

Senator **Baucus**. Both preventive authority as well as resources?

Mr. **Moore**. Yes, resources and dollars.

Senator **Baucus**. What about California?

Mr. **Whitney**. I think I am the sole exception that indicated the States can't do it alone, I don't believe. I am inviting you into the business as far as the California perspective is concerned. Second, we do not have all the tools but we have most of the tools in an after-the-fact situation, that is, where the pollution has occurred we do have the regulatory power to seek remedies, but we have not as much power to prevent, and that is why I am asking you to consider that.

Senator **Baucus**. Why are States so late in finding the problem?

Mr. **Burke**. I think the entire Nation has been late in defining the problem, and regulations such as RCRA, Toxic Substances Control Act, the amendments to the Safe Drinking Water Act are late in that the problem we are now seeing and we have discovered is one that began 50, 100 years ago. I don't think the blame can be placed on the States. It is just that the awareness, the technological expertise to define the problem is a recent occurrence.

Mr. **Whitney**. I believe it is even more fundamental than that. I think we are coming into an age of awareness of the chemicals that are in our environment and in our daily lives and people are concerned about that and have put pressure on governmental bodies at every level to go out and look, and now that we have looked we are finding. We have had higher priorities before, septic tanks and conventional sewage treatment, and now we are maturing and more sophisticated, we are learning every day more things about chemicals we didn't know yesterday.

Mr. MOORE. One other thing is we didn't know how the ground water moved until a lot of detailed data was done on the definition of ground water and definition of aquifers and soils, and that has only been a recent occurrence.

Senator BAUCUS. I agree, but I don't know what the solution is because I think we are going to probably find more and more toxics.

Thank you.

Senator MOYNIHAN. I was going to say to Senator Baucus we don't know what the solution is, sure, but we are beginning to learn what the problem is. And there is a great French philosopher who said, "The most corrupting lies are problems poorly stated." Getting the problem stated correctly is important, and I think an analogy is important here. And I wonder just as the great disease problems through the history of mankind, but concentrated in the 19th century and finally understood in the 20th century, was that of waterborne bacteria, that we are beginning to learn and beginning, in New Jersey it has been stated by one of your health commissioners in effect that waterborne toxic wastes may be the great health problem of the 20th and 21st centuries. The analogy is at the level of acceptable. Do you not think we are beginning to see this? I would say that, Mr. Whitney, every day we are learning something new about chemicals. It is also true that every day we are learning about a new chemical, we are creating a new chemical. The great technological revolution of our century has been in chemistry. So this is natural, and water transmits it.

The halogenated volatile organic compounds Mr. Burke talked about is just there, and it happens when you get bromines and chlorines and they turn to gases and they move readily through water systems.

I guess I would like to ask the panel one thing. Both Mr. Burke and Mr. Moore, and possibly Mr. Whitney, suggested there were problems with the somewhat narrow definition issues of S. 2131. For example, New Jersey has kind of a layered aquifer which might be a sole source aquifer and might not be. You have a lot of aquifers in which 1 million people are served in a combination of ways, 10 percent from sole source aquifers, but they are all in the same community. Could we ask you to send us comments on how you think the bill might be improved?

Mr. WHITNEY. I would be glad to do that.

Senator MOYNIHAN. You are out there doing this. It may be we can't enlarge it, it may be we won't have support for the bill. But I think all three of you would support this kind of measure at some level.

Mr. BURKE. I agree. I would gladly send you comments and suggestions for improvement. I think we all agree with the preventive approach and the intent. There are ways it could be improved to better serve the States, with broader definitions and inclusion of more types of sources of water.

Senator MOYNIHAN. Mr. Chairman, do you think that might be helpful? We would get the advice of our witnesses here.

Senator GORTON. That is precisely why we called them in the first place. We certainly would like to have that kind of help.

Senator MOYNIHAN. I would like to thank them for excellent testimony, which I had a chance to read the night before.

Senator GORTON. Since I was not here during your testimony, I do have a number of questions which have been prepared by staff which I think would be more appropriate to submit in writing.

Senator MOYNIHAN. Mr. Chairman, would you excuse me if I go back to the floor.

Senator GORTON. Certainly. Don't let anything happen.

We may submit some questions to you, both about your general views and experience and some questions to each of you individually about your own State experience. We thank you for your testimony.

The next and last group for today consists of Mr. Steinberg and Mr. Briggs. I believe Mr. Steinberg has an associate as well.

Mr. Steinberg, you may proceed, and introduce your associate if you would like.

STATEMENTS OF FREDERICK W. STEINBERG, SENIOR ATTORNEY, PPG INDUSTRIES, INC., ON BEHALF OF THE CHEMICAL MANUFACTURERS ASSOCIATION; AND PETER B. BRIGGS, ANACONDA MINERALS CO., ON BEHALF OF THE AMERICAN MINING CONGRESS, ACCOMPANIED BY ALAN EGLER, Du PONT CHEMICAL CORP.

Mr. STEINBERG. Good afternoon, Mr. Chairman. My name is Frederick W. Steinberg. I am a senior attorney with PPG Industries, Inc., in Pittsburgh, Pa. With me today on my right is Mr. Alan Egler, technical services engineer with E. I. du Pont de Nemours & Co., Wilmington, Del. I am speaking today on behalf of the Chemical Manufacturers Association. CMA is a nonprofit trade association whose company members represent more than 90 percent of the productive capacity of basic industrial chemicals within this country. Mr. Egler and I are both members of CMA's ground water task group.

CMA believes there is a need for a ground water management system that can protect public health and the environment, while responsibly maintaining multiple uses of the resource. To that end, CMA is developing a concept of managing ground water by its classification according to existing and future uses. Although we do not intend to present this concept as either a panacea or as set in concrete, CMA believes this concept offers several advantages that I will discuss this afternoon.

CMA strongly believes that the most practical and technically feasible approach to ground water management is a State administered management system which employs use classification as the basis for preserving ground water's multiple uses. The Federal Government's role would be to assist the States in developing ground water management plans by providing information and technical assistance. The Federal Government should also harmonize existing environmental programs that may affect ground water. We understand that coordination of that kind is receiving serious attention at EPA today.

The multiple use classification system offers perspectives and practical advantages not available under other proposals. First, CMA believes it is fundamental that the multitude of ground water uses be acknowledged if we are to more effectively manage and protect this resource. Other systems that would classify ground water as if it were to be reserved for a single use, for example, drinking water, irrespective of actual need or use, fail to account for the fact that ground water differs in utility, depending upon local needs and the ability of aquifers to meet those needs. Such systems, we feel, would curtail other essential ground water uses or other productive human activity, without any demonstration that the presumed use would match the actual need.

One of the most important advantages we see in classifying ground water by use is the ability to protect adequate ground water for future drinking water needs. As part of the classification process, a determination should be required that future drinking water supplies are fully adequate before allowing ground water of drinking water quality to be used for other purposes.

A use-based classification system, could provide those responsible for managing ground water with a basis for planning and taking action. Those who utilize ground water by withdrawal or otherwise affect ground water must be responsible for the protection of the resource within its classified purpose. An example would be chemical manufacturing which should be permitted above an aquifer classified for drinking use provided that the plant's environmental protection measures will be effective in preventing impairment of this designated use of the aquifer. Thus, this approach does not imply that the constituents found in classified ground water will decrease or remain the same. What we do believe is that a classification system would insure that the amount and type of man induced constituents in the ground water would not cause the classified use to be impaired.

Another advantage of the use-based classification system is that it can be responsive to new or changing uses. Only ground water currently in use or reasonably shown to be needed for a specified purpose in the future need be classified. Other ground water without uses would remain protected and unclassified until a need arises. In this way and with the flexibility to reclassify ground water, ground water supplies for new uses can be provided and the management system can adjust to shifting ground water needs over time.

You have heard testimony about the kind of data that would be important prior to actually implementing a classification system. I won't trouble the committee today, given the shortage of time, with that data, but I would like to emphasize that from what we have learned most of the data does exist, it is available from State and Federal agencies, including the U.S. Geological Survey, that was represented today before this subcommittee.

Turning for a moment to S. 2131, CMA believes a comprehensive, multiple-use approach provides an excellent vehicle for managing ground water resources. In contrast, S. 2131 is, with due respect, undesirably narrow in its focus on a single, albeit important, use of a ground water resource. It fails to recognize other uses of ground water, some of which require ground water of even higher quality than the drinking use. S. 2131 may also impose more stringent controls than are necessary. Our specific concerns would include, first, what we see as an excessive degree of Federal control over the contents of State ground water management plans and the States' eligibility for financial aid in implementing those plans. Second, what we characterize as a no-growth concept in ground water recharge areas which cover vast portions of this country. We fear that S. 2131 would give inadequate consideration to existing techniques for protecting ground water from the admittedly undesirable environmental side effects of industrial, commercial, and other essential human activities. Third, we are concerned about the requirement that the States assess the impact of human activities on both ground water and surface water quality. This requirement could imply that current activities, even though specifically authorized and regulated by valid permits, would be undercut. An example would be discharges authorized today under the National Pollutant Discharge Elimination System, pursuant to the Clean Water Act.

CMA's goal is to participate in the regulatory and legislative processes and provide a necessary forum in the industry so that common goals can be arrived at and implemented. We recognize that added emphasis on education of both our member companies and the public sector is critical. CMA has published and is today preparing special reports explaining ground water technology, management fundamentals, and their relationship to the development of a coherent and scientifically valid national policy.

Thank you, Mr. Chairman. Mr. Egler and I would be glad to address your questions.

Senator GORTON. Thank you, and you very well summarized your statement. The entire written statement will be included in the record.

Before we ask questions, we will go to Mr. Briggs, and we would ask you to summarize, and your full statement will be included in the record.

STATEMENT OF PETER BRIGGS

Mr. BRIGGS. My name is Peter Briggs. I am a senior adviser, Government and industry analysis, for the Anaconda Minerals Co., and chairman of the Amercian Mining Congress Water Quality Control Subcommittee.

I am here this aftenoon representing the American Mining Congress, a national association of companies that produce most of the Nation's supply of metals, coal and industrial and agricultural minerals.

My statement today has two purposes: First, to convey AMC's views about ground water protection and management, including a description of steps that the mining industry is taking to encourage ground water protection; and second, to address the provisions of S. 2131, the Sole Source Aquifer Protection Act of 1982.

Ground water is one of this Nation's most important natural resources. Approximately 25 percent of the fresh water used in the United States is ground water, and it is the primary source of drinking water for about 50 percent of our population. Because of its importance, this natural resource must be carefully managed to accommodate a host of diverse needs and uses vital to the environmental as well as the economic health and welfare of the Nation.

AMC has spent considerable time and effort studying, discussing and analyzing the subject of ground water management. We identified specific features that we believe should be a part of any ground water management policy in response to the Environmental Protection Agency's request for comment on its proposed national ground water strategy of 1980. During that process we identified several features we believe should be part of any protection strategy. A copy of those comments is attached to my statement. Let me just highlight a few of the things we had discussed.

We believe that any effective ground water management scheme must protect public health and the environment. This, however, does not mean that all ground water must be restricted to a single use or protection standard.

Effective ground water management must consider the usefulness of the resources as it exists. Ground water quality varies widley within and among aquifers. Some aquifers are most suitable for sources of drinking water, while others could be best utilized by allowing mineral recovery or some other activity to occur within or over them. Wise management will recognize that the location and individual hydrogeologic conditions as well as the natural quality of ground waters, will, in part, determine the use or uses to which different bodies of ground water may be put. In other words, water quality is but one measure of the usefulness of the resource.

Management of ground water for multiple uses and also for the protection of human health and the environment are not mutually exclusive or contradictory goals.

On the other side of the coin is a policy known as nondegradation. It is in opposition to the principle of multiple use. Such a policy ignores the varying conditions and possible uses of ground water throughout the country. We have seen the USGS chart earlier this afternoon with several different kinds of uses, broad categories with many different uses, commercial as well as public. Nondegradation is also inconsistent with technology-based statutes which are commonly used to protect the environment. By enacting technology-based environmental statues, Congress has recognized that is wisest to control and not prohibit discharge. A nondegradation policy would prohibit discharge.

The primary responsibility for managing ground water use has traditionally resided with the States, and we believe it should stay there. The volume of ground water varies from State to State, and it is a proper State role to decide its need and priority.

Last, we should recognize that there is a very strong hydrogeologic relationship between ground water quality and quantity. The buzz word is "inextricably linked."

The Federal role, as we would identify it, is one of support—to identify broad national goals, conduct research, disseminate basic scientific information, provide financial assistance to the States, if they need it, and implenment the ground water strategy along the lines we have heard today from some of the State witnesses. It is our understanding that EPA's soon-to-be-proposed ground water strategy will accomplish many of these objectives. We don't believe that new legislation is warranted. We believe that the Federal Government has ample existing authority protect ground water under the various statutes such as the Clean Water Act, the Safe Drinking Water Act, as currently written, the Resource Conservation and Recovery Act, the Surface Mining Control and Reclamation Act, and the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund.

What has the mining industry been doing to encourage ground water protection and management?

We have made extensive comments to EPA. We have done a lot of homework on our own, in-house. We have also presented extensive written and oral information to individual States where individual companies operate. I am most familiar with the Arizona and Montana programs that are being developed at the moment. We participated in the development of EPA underground injection control regulations as well as individual statewide programs.

Research about ground water is proceeding in the industry. We are expending significant time and funds to cooperate with EPA and its contractors in an in-depth study of the effects of mining on ground water, conducted pursuant to the Resource Conservation and Recovery Act amendments of last year.

Individual companies are making efforts to educate their employees. One of the largest shops in Anaconda's environmental department is the hydrogeology shop. We have more professionals there than in any other discipline in the environmental field. The mining industry is also making an effort to educate the public. I have attached one or our member company's brochures about ground water and one of their operations in Florida.

Moving to S. 2131, the American Mining Congress believes that the bill embodies very worthwhile concepts. It acknowledges that local governments and States must bear the primary responsibility for developing ground water protection. The bill also recognizes that an appropriate role for the Federal Government is to provide incentives to State and local governments.

However, some of the bills other provisions are such that we must strongly oppose it. The ramifications of certain parts of the bill we believe de facto tread on traditional State rights and responsibilities to allocate waters within their jurisdictions. The timing of the bill we think is somewhat premature based on ongoing efforts in EPA, particularly over the last 2 or 3 years, that will administer the acts I have already talked about in a consistent fashion for the protection of ground water.

The bill implies a nondegradation standard and could set the stage for a no-growth policy.

There is language in the act that I won't bother you with at the moment, but there are some terms that I as a hydrologist find strange. One is "special protection area watershed." My problem with that sort of term is that "watershed" is a common surface water term not a ground water term.

Will you please refer to your copy of the brochure entitled "water, water conservation and the Edwards Aquifer," if Mr. Fox will allow me to use this. This is a good illustration of what I am talking about. On pages 12 and 13 is the schematic of the Edwards Aquifer. The large dotted line out there, covers the entire watershed, the drainage area, recharge area, and the artesian area. By thumbnail from the scale of miles at the front of the document, that area is roughly 4,000 or 5,000 square miles. The area located in the recharge zone is considerably smaller. This bill does not distinguish between the watershed area and the recharge area. It would protect the entire watershed area, as we read it. We don't think that it is wise to regulate such a large area. The implication for a no-growth policy is that it prohibits development, including mineral extraction, in the entire watershed area.

In a sense, the bill promotes indirect Federal land use planning through the back door by giving EPA the authority to say yes or no on the manager's plan, and the Governor's plan, for protection. The question in our minds is if that plan is consistent with State statutes but is not acceptable to EPA, does the State have to go back and pass laws that would be acceptable to EPA? We feel this is an intrusion into States' traditional rights.

As I said, we believe the bill is well intentioned, but premature, and needs technical fixing.

I will stop there and be happy to answer any questions you have.

Senator GORTON. Thank you both very much. We will have some general questions, and Mr. Egler has been invited to participate in answering them, too, if he wishes to do so.

Both of you have ~~objected to~~ S. 2131 because of a singular approach to protect sole source aquifers through land use controls themselves. Are there any instances more narrowly defined than the language of the bill in which land use controls are advisable as a management option to protect ground waters?

Mr. STEINBERG. If I might, Senator, I am not a geologist or hydrologist, but I have worked in this area at CMA long enough to know there is clearly a nexus between land surface activities and ground water quality. Under the CMA use classification concept, it could very well happen that a State would implement its own limitiation on the kinds of surface activities that would be shown to have such a deleterious impact on the ground water beneath that there would in fact be an impairment of the classified use of that ground water. In summary, I think it is our position that land use per se is not necessarily an objectionable technique to preserve ground water quality, but rather it ought to be left within the confines of the States to ascertain the scope and type of land use restrictions and, moreover, the land use controls ought to be directly tied to use impairment before they are implemented.

Senator GORTON. That expresses your views?

Mr. BRIGGS. I would agree with that, and I would also add that land use is only one management tool. There are several others, land use may not be the particular tool necessary on advisable for every particular site.

Senator GORTON. The mining industry has a particularly unique difficulty, does it not, because you can't move the mineral deposits.

Mr. **Briggs**. That is correct. Mineral deposits must be mined where they occur. For example coal, particularly in the West, phosphate, limestone, and sand and gravel are often located in aquifers. If the aquifer happens to be a sole source aquifer there may be impasses to resolve.

The resolution of the impasses should be based not only on the characteristcs of the aquifer but also the value of the mineral and the uses it serves. Controls or restrictions imposed on a mining operation should be considered very very carefully, more so perhaps than if an aquifer were not sole source.

Denial of a mine application should not be automatic simply because a mine causes land disturbance above a sole source aquifer.

Senator **Gorton**. Any classification scheme which is based on the fundamental multiple use concept is, of course, going to result in some kind of conflict. Can you give me an illustration or two of situations in which it would not be in the public interest to protect a drinking water source but would be in the public interest to protect that same source for industrial or agricultural uses?

Mr. **Steinberg**. I think perhaps the clearest example of that is a community or areas that are blessed with greater quantities of potable ground water than are presently needed or in fact would be needed under the best projections available. That community, however, might be faced with very serious economic incentives to expand its industrial base, an industrial base that would have need for ground water and which could conceivably have an impact on ground water quality but within the limits permitted by the frankly very large number of environmental programs and permit requirements that are already in place. So it would not be an unregulated degradation of ground water quality, but one that recognizes the drinking water needs while at the same time protecting essential economic activity in the community.

Senator **Gorton**. You, Mr. Steinberg, speak of projection for future uses. How far into the future should we try to look in developing such projection strategies?

Mr. **Steinberg**. I think that is going to vary on a case-by-case basis, Mr. Chairman. We will be largely restricted by the data available. We will be largely restricted by the degree of foresight that the municipal planners are able to muster and articulate for their constituencies. I think the goal ought to be to plan as far ahead as one reasonably can before one is overcome by a sense of unease that greater sacrifices are being made in the present in the interests of objectives that one really has little or no confidence will ever come to pass. I realize that is not a scientific or a very precise formula, but I am not sure projections of that kind ever are.

Senator **Gorton**. Mr. Briggs, has AMC changed its position since 1980 on the proposition as to whether or not a national ground water strategy is warranted, in reflection of what you have said here today as opposed to what you all testified 2 years ago at EPA?

Mr. **Briggs**. There may be a shade of difference here. I don't believe AMC has changed its position. Its position in 1980, and it may not be clear in the statement, was based on a national protection strategy prepared by EPA. The AMC position at that time was not in agreement with EPA, but may be consistent now with the

Agency since the Agency intends to implement those Federal statutes on the books in a consistent manner. In that sense our position hasn't changed, but the EPA's focus has changed. There has been a learning curve in the last couple of years on ground water generally within industry, and government. People are more aware of the issue and understand it better. The issue has spread from just those who were professional water type people to others, and the education is continuing. I don't know where it is going to come out. We are still talking about it.

Senator GORTON. We do have a number of other areas in which all three of you can provide considerable assistance to you. We are late in the day and I intend to adjourn this meeting. But we would like, if you will, your answers to additional written questions which flow out of the testimony and positions you have already taken, and we will submit such questions to you.

Mr. STEINBERG. CMA would welcome that opportunity, Mr. Chairman.

Senator GORTON. Thank you very much.

The meeting is adjourned.

[Whereupon, at 4:50 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.]

[Statements submitted for the record follow:]

Statement of the United States Geological Survey before the Subcommittee on Toxic Substances and Environmental Oversight of the Committee on Environment and Public Works, United States Senate.

SUMMARY

Pumpage of ground water in the United States has nearly tripled over the past three decades, from less than 35 billion gallons per day (bgd) in 1950 to more than 88 bgd in 1980. Despite this increase, the resource is not overdeveloped on a national level. With proper management, substantial further increases in pumpage are possible in many parts of the country without generating major hydrologic problems. Locally, overdevelopment problems do exist. For example, depletion of the resource appears to be threatened in the Southern High Plains; and land subsidence has accompanied development in the San Joaquin Valley of California.

Over the same 3-decade period, activities which generate ground-water contamination have increased markedly, and instances of detected ground-water contamination have similarly increased. Despite these increases, it is an exaggeration to say that the ground-water resources of the country are severely or generally contaminated. The total volume of contaminated ground water is estimated as less than 1 percent of the volume of useable ground water in the Nation. Unfortunately this contaminated water is generally found where it will cause the greatest problems--that is, near centers of population where pumpage tends to be high. However, the most severe contamination tends to occur in slowly developing pockets around point sources of pollution; with careful management, it may be possible to control the influence of many of these contaminated zones on water supplies.

The USGS maintains several programs designed to increase our knowledge and understanding of ground-water resources and ground-water quality. Among these are the ground-water investigations carried out under the Federal-State Cooperative Program and on behalf of other Federal agencies; the Regional Aquifer-System Analysis (RASA) Program; and two programs relating specifically to waste disposal and ground-water contamination, the Radioactive Waste Program, and the Toxic Wastes-Ground Water Contamination Program.

State and local authorities inevitably, in practice, assume much of the responsibility for the protection of ground-water supplies and ground-water quality. Permitting or other control of ground-water utilization, where such control exists, has traditionally been exercised by the States. Local authorities, in regulating land use, invariably enter into decisions which impact ground-water quality. It is essential that State and local governments maintain some in-house expertise to address the ground-water aspects of their regulatory functions. Through the cooperative program, the USGS strives to build that expertise, and to provide the information and assistance required to support and supplement it.

Classification of ground waters is rendered difficult by the unified and dynamic character of the ground-water regime. An alternative approach is to consider the full range of hydrogeologic factors, in order to determine areas in which waste disposal sites can be constructed with minimum risk.

Statement of the United States Geological Survey before the Subcommittee on Toxic Substances and Environmental Oversight of the Committee on Environment and Public Works, United States Senate.

THE STATUS OF THE NATION'S GROUND-WATER RESOURCES AND THE PROGRAMS OF THE GEOLOGICAL SURVEY RELATING TO GROUND WATER

This statement is submitted in response to specific questions raised by the Committee on Environment and Public Works regarding the status of ground-water resources in the United States, the programs of the U.S. Geological Survey (USGS) that address ground-water contamination problems, the activities by Federal, State, and local governments to protect ground-water resources from contamination, needed expertise and knowledge at State and local level to effectively protect the resources, and classification of ground waters.

Ground water is one of the Nation's greatest resources, but overall, it is underutilized. In addition, it is susceptible to local depletion and (or) contamination if not properly managed or protected. The USGS has been studying ground-water resources since the agency was established in 1879. The Survey has the largest staff of ground-water hydrologists in the world and has long been the leader in many phases of ground-water study.

The movement of ground water is complex, from the percolation of precipitation on the land surface downward to the water table and, hence, down gradient to a stream or the ocean. To understand ground water and its susceptibility to overdevelopment or contamination, an individual must understand this flow system. The following section contains a brief description of the flow system.

I. GROUND-WATER SYSTEMS

Interconnected pores, fractures, or solution openings are found in almost all of the rocks and sediments which make up the solid framework of the earth. A percentage of the precipitation which falls on the earth's surface infiltrates this system of openings and percolates downward, ultimately reaching the water table. Below the water table, the porous framework of the earth is completely saturated; given sufficient time, water will collect in wells or test holes which penetrate below this depth. This condition of saturation can be found at some depth almost anywhere in the world. Where the saturated permeable material can yield economically significant quantities of water, the body of rock is called an aquifer.

Under natural conditions, the ground water in the saturated regime, below the water table, is generally in motion from areas of recharge (from precipitation) to points of discharge at the surface. Normally the recharge is widely dispersed; the discharge is usually to the stream system, although it may also occur as evapotranspiration by plants, or as direct seepage to the sea in coastal areas. Under natural conditions, an equilibrium generally prevails in which the long term recharge to the ground-water system is balanced by the long term discharge from it. We tend to speak of ground water in terms of distinct aquifers and impervious units, or in terms of artesian conditions and water table conditions. However, the natural ground-water regime is probably better visualized as a unified flow system, in which water moves through a heterogeneous framework of geologic materials, some of which are highly permeable and others but slightly so. The system is characterized by superimposed patterns of circulation, ranging from shallow, local flow into small upland streams, to deep regional circulation toward major drainage features.

Although saturated conditions can be found almost anywhere if drilling is carried to a sufficient depth, it is not true that ground-water supplies can be developed anywhere. Such development is possible only where the geologic materials are sufficiently permeable to allow water to move readily into a well, and where the water is of a quality suitable for use. When pumpage of ground water is initiated, ground-water levels decline as water is withdrawn from storage. Ultimately, withdrawal from storage may cease, and a new equilibrium may be established in which the rate of recharge balances the pumpage and the remaining natural discharge. On the other hand, if the pumping rate exceeds the reductions in natural discharge and the increases in recharge which can be effected in the system withdrawal from storage will continue until falling water levels force a reduction in pumping rates. An equilibrium is then established in which the natural discharge and this reduced pumping rate are balanced by the recharge.

The time required for a system to reach equilibrium varies widely. For highly permeable systems in areas of plentiful recharge, such as some of the limestone regions of Florida, a new equilibrium can be attained within a matter of days following an increase in pumpage. In the Southern High Plains, on the other hand, where pumpage far exceeds the reductions in natural discharge or the increases in recharge which can be effected, withdrawal from storage has continued for decades, and no equilibrium will be attained until rates of pumping are diminished by falling water levels.

The preceding discussion does not imply that withdrawal of ground water from storage is necessarily undesirable. In fact, no development of ground water is possible without withdrawal from storage, since this is necessarily the first process which must occur in response to pumpage. Even sustained storage withdrawal, or as it is often termed, "ground-water mining," may often be beneficial and economically viable, analogous to the mining of other mineral resources. The critical factor is that the operation be recognized for what it is, and that the time-dependent nature of the operation be taken into account in any economic evaluation of its merits.

As the preceding discussion suggests, ground water and surface water are not two independent sources of water, but rather are two interrelated parts of the hydrologic cycle. Development of ground water inevitably affects streamflows, except in cases where the entire natural discharge was to evapotranspiration or to the sea. In many applications, of course, some of the pumped ground water is discharged to the stream system or returned to the ground-water system after a cycle of use. In these cases the impact of pumpage on stream flow is reduced, but may be replaced by an impact on water quality.

Ground-water velocities under natural conditions always tend to be low. The highest velocities are normally found in very shallow ground-water circulation toward local upland streams, where times of travel from recharge to discharge point may be measured in months or years. Velocities tend to become smaller with depth, and distances of flow become greater, so that times of travel measured in decades, centuries, and millenia are commonly calculated in deeper ground-water flow systems.

Management of ground-water supply and ground-water quality is today increasingly based on the technology of computer simulation of aquifer systems--that is, the process of creating mathematical models of an aquifer system, through which the equations describing that system can be solved on a digital computer. This allows the hydrologist or water manager to predict the hydraulic consequences, and for some simple cases the chemical consequences, of a proposed scheme of pumpage or waste disposal, before that scheme is implemented in the field. USGS programs in ground water and ground-water quality make heavy use of simulation; and even when simulation is not a direct objective, our programs are normally designed to assemble the kinds of information required for simulation.

II. GENERAL STATUS OF THE NATION'S GROUND WATER RESOURCES

The volume of ground water presently in storage in the Nation's aquifer systems has been estimated to be on the order of 100 quadrillion gallons, or about 16 times the volume of the Great Lakes. However, at least half of this volume represents deep lying saline water, with little or no potential for development. The flow through the ground-water system in the United States has been estimated at roughly one trillion gallons per day. This includes a large percentage of very shallow circulation, which presently discharges to surface streams without reaching major aquifers, but some of which could presumably be diverted into deeper patterns of flow in response to pumpage.

The pumpage of ground water in the United States in 1980 was estimated at approximately 88 billion gallons per day, which is on the order of 10 percent of the estimated natural flow through the Nation's ground-water systems. Viewed in a national sense, therefore, the resource is not overdeveloped; locally, however the situation can vary widely, and a number of problems exist.

Ground-water pumpage has increased steadily over the last three decades as shown in figure 1. (Figure 1 was developed using data collected at 5-year intervals, and does not indicate yearly variations occurring within those intervals.) The total ground-water pumpage in 1980 represented about 20 percent of the total use of water in the United States, excluding hydroelectric power generation. The largest single use of ground water is for irrigation, which in 1980 accounted for slightly more than 60 billion gallons per day. It is important to note, however, that while such irrigation represents the largest withdrawal, roughly half of the population of the country relies on ground water for domestic supply. Some of the factors responsible for the continued increase in ground-water use include: significant expansion of irrigation, particularly in areas where it has not been extensively practiced in the past; water-supply requirements of growing urban areas, particularly in the south and southwest; water demands associated with energy production; a desire to establish drought-resistant supplies; and objections to the construction of new surface reservoirs.

Two-thirds of the 1980 pumpage, or approximately 59 billion gallons per day was concentrated in eight States, as follows: California (21 bgd); Texas (8 bgd); Nebraska (7.2 bgd); Idaho (6.3 bgd); Kansas (5.6 bgd); Arizona (4.2 bgd); Arkansas (4 bgd); and Florida (3.8 bgd). For the most part, these figures reflect the heavy use of ground water for irrigation in those States.

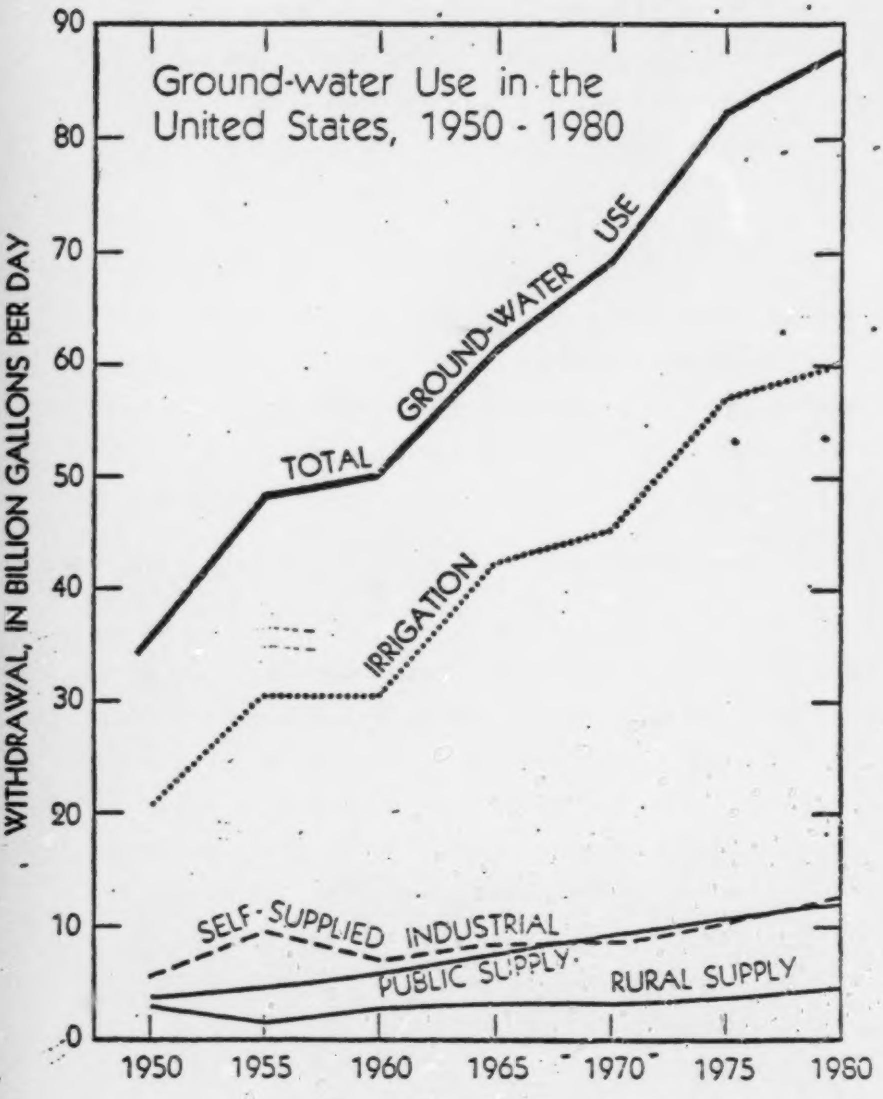


Figure 1--Ground-water Use in the United States, 1950 - 1980.

The Central Valley of California is presently the most heavily pumped contiguous irrigated area in the country. It appears that more than three quarters of the water that has been pumped in the Central Valley over the years has been derived from recharge, or reduced natural outflow; and the system seems to be roughly at equilibrium at present. However, the withdrawals from storage that have occurred in the Central Valley are significant, in that they have been accompanied in many areas by severe land subsidence. With proper management, ground water can continue to be used conjunctively with surface water in the Central Valley; and short term withdrawals from storage, particularly in times of drought, can continue to be a management option. Indiscriminate increases in pumping rates, on the other hand, leading to sustained withdrawals from storage, would undoubtedly generate a resumption of large scale land subsidence.

The Ogallala Aquifer of the High Plains has been extensively developed for irrigation, particularly in its southern segment, in west Texas and New Mexico. The aquifer actually covers parts of eight states--Nebraska, Kansas, Oklahoma, Colorado, Wyoming, and South Dakota, in addition to the two mentioned above. Viewed in that regional context, only about 5 percent of the water that was originally present in the Ogallala Aquifer has been removed by pumpage. In the northern parts of the system, where pumpage is less intense and recharge more plentiful, the impact of development has been light. In the Southern High Plains, on the other hand, recharge is small, and virtually all of the pumpage has been supplied by withdrawal from storage. The resulting decline in water levels has been severe in some localities, causing loss of well production, and threatening local exhaustion of the supply over the next 20 to 40 years. Management options here undoubtedly include improvements in irrigation efficiency and possibly in well field design, to extend the life of the aquifer.

The carbonate aquifers of the Florida peninsula have been extensively developed, both for irrigation and for municipal supply. The aquifers are highly permeable and heavily recharged; the system appears to adjust rapidly to a new equilibrium after each increase in pumpage. Current estimates are that total pumpage represents about 10 percent of the natural flow through the system. Local problems of saltwater encroachment exist; but in many areas, freshwater extends seaward for many miles beneath the ocean. Sinkhole development is frequently a feature of limestone terrain whether ground water is pumped or not; it is possible, however, that pumpage in Florida may have accelerated the process slightly in a few localities. The nature of the limestone permeability is such that relatively rapid movement of contaminants is possible; thus the management of waste disposal is a major concern in development and use of the aquifer system. Despite the problems which exist, the overall outlook for expanded development of the limestone system appears to be excellent.

In the Northern Great Plains area (States of Montana, North Dakota, South Dakota, and Wyoming), the Dakota Sandstone and other relatively accessible aquifers have been developed extensively for irrigation. Development of coal resources in this area has generated a new set of competing water demands, and interest is currently focused on deeper relatively undeveloped aquifers, such as the Madison limestone, as possible sources of supply.

In Idaho, the basalt aquifers of the Snake River Plain are among the most prolific in the nation, helping to sustain a vigorous irrigated agriculture. Further west, the basalts of the Columbia Plateau, while less productive than those of the Snake River Plain, still form an important source of water with great potential for further development.

The Atlantic coastal plain, from Long Island to Georgia, is an area underlain by unconsolidated sands and clays, in which the sand intervals generally function as very productive aquifers. A great deal of development for urban and industrial use has taken place, and millions of people in this area rely on ground water for domestic use. Overall, the pattern of development has involved successive increases in pumpage, each accompanied by a period of storage withdrawal, followed in turn by adjustment to a new equilibrium. There is some evidence of minor local land subsidence associated with the storage withdrawal, and contamination of the aquifers in some urban areas has been a major concern.

In the alluvial basins of Nevada, Arizona, and New Mexico, ground water has been a primary source of irrigation and municipal supply for many decades. In many areas, it represents the only available source of supply. Extensive withdrawal from storage is commonplace, and competition for water between irrigators and rapidly growing municipalities is becoming an increasing matter of concern.

The Mississippi Embayment-Gulf Coastal Plain area, covering parts of Texas, Louisiana, Mississippi, Tennessee, and Arkansas, contains a vast complex of unconsolidated sediments in which many of the sand units are excellent aquifers. Development for irrigation and municipal supply has been extensive; local problems have included accelerating drawdown, land subsidence, and local contamination from surface disposal of oil field brines and other waste liquids.

In the glacial valleys of the Northeastern states, development of ground water has been primarily for domestic, municipal, and industrial supply. The aquifers tend to be of limited extent, and are usually well linked to a local stream system, so that withdrawal from either source influences the other. Conjunctive management of ground water and surface water is required in management of the resource. Contamination is the major problem facing the area, and movement of contaminants between the ground-water and surface-water systems is a primary concern.

The aquifer systems of the upper midwest States of Minnesota, Wisconsin, Iowa, Missouri, Illinois, and Indiana include glacial, sandstone, and carbonate units which have been widely utilized for domestic, municipal, and industrial supply, and which are being increasingly utilized for irrigation. Extensive pumping in the Chicago and Milwaukee municipal areas has resulted in widespread declines of artesian water level in the region around and between these two cities. Contamination problems have appeared in many localities.

III. QUALITY OF THE NATION'S GROUND-WATER RESOURCES

Although we have some understanding of the quantity of our ground-water resource, we have relatively little information on its quality, especially regarding toxic contaminants. This lack of information is due largely to the invisibility of the resource, to the fact that large segments of the resource remain undeveloped, and to the difficulty and expense of obtaining and interpreting meaningful data. Our ground-water quality information tends to focus on small problem areas of a few square miles or less where contamination has jeopardized or prevented intended uses of the water.

The quality of ground water can be degraded by both natural processes and human activities. Natural causes of quality degradation include mixing with saline water and leaching of toxic elements or compounds from minerals and petroleum deposits. Although naturally degraded ground water can be found virtually anywhere if one drills a deep enough well, mankind's impacts on ground-water quality will be the principal topic addressed in this statement.

Ground-water contamination, which has been termed "the environmental issue of the 1980's," is not a new phenomenon of the past decade or two. People have undoubtedly been plagued, literally, with contaminated ground water for millenia. Documented cases date back centuries. People, their wastes, and their water supplies constitute one of man's eternal triangles; where one is, the other two are almost always present.

However, the problem is a growing one--more and more ground water is becoming contaminated. We have also become increasingly conscious of our water quality. The problem of ground-water contamination is worsening, or appears to be worsening; first of all because we are looking harder for contamination and finding it. Secondly, we are developing more ground water each year for drinking water supplies and other uses. Thirdly, we have been generating more and more toxic waste products per capita each year. Fourthly, it takes many years for contamination to spread in ground water and we are now reaping the fruits of our actions over the past century or so. Finally, we are simply more interested, aware, and concerned about environmental problems than we were 20 years ago, so that contamination problems like Love Canal and Valley of the Drums make front-page news.

Because of the invisibility and complex nature of the ground-water resource, we do not know how much, or how badly, it is contaminated. The USGS, as well as the National Water Well Association, estimates that probably less than 1 percent of our potable shallow ground-water supply is contaminated, based on quantities of waste generated and numbers of disposal, storage, and spill sites. However, those estimates do not include most agricultural sources of contamination.

It is clear then, that most of our ground water, at least 98 percent or so, is uncontaminated by human activities. The problem is that the contamination almost always occurs where the people and their drinking water supplies are. Also, it is important to keep in mind that about 95 percent of the Nation's readily available potable water is ground water and that one-half the population of the United States relies on ground water for domestic supply. Therefore, even a 1 percent loss of this invaluable resource is a loss of significant consequence.

The chemical and biological degradation of our ground water has resulted from a variety of sources including approximately 7000 known hazardous waste disposal sites, 180,000 other chemical sites and impoundments, 200,000 municipal landfills, and countless septic tanks, disposal wells, leaks and spills (figure 3). Septic tanks alone discharge 800 billion gallons of effluent to our ground water per year.

The drinking-water supplies (ground water) of more than 2 million people in places like Long Island, New York; St. Louis Park, Minnesota; Barstow, California; and hundreds of other communities have been lost in recent years due to contamination. It is clear that the problem is a large one that promises to get worse before it gets better.

Although industrial toxic waste disposal sites such as Love Canal, New York are significant sources of contamination, the Environmental Protection Agency (EPA) ranks ground-water pollution sources in the following order: (1) septic tanks, (2) petroleum exploration and development activities, (3) landfills and dumps, (4) agricultural practices, and (5) waste piles, sumps, and lagoons.

Citizens and small businesses are often collectively large contributors to local contamination problems by their discards to trash cans or discharges to the ground (pesticide containers, crank case oil, organic solvents, petroleum fuels, etc.).

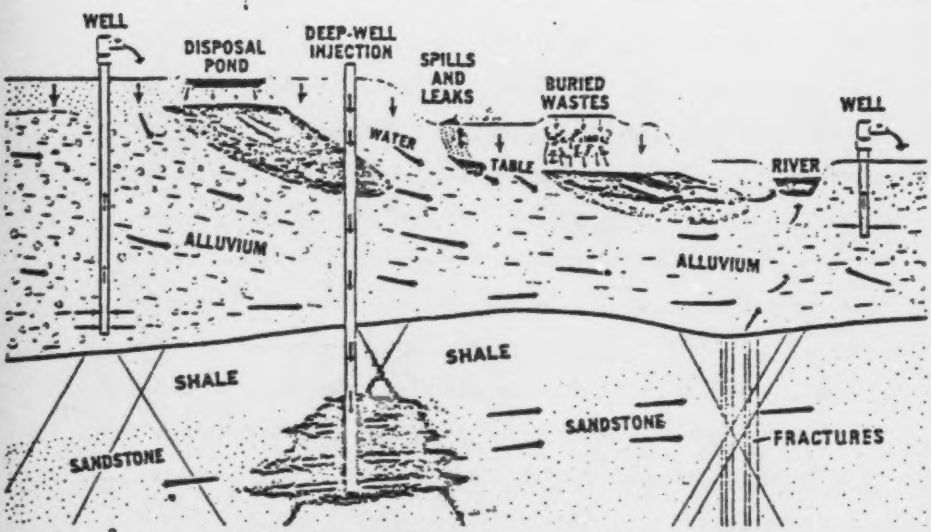

WELL
DISPOSAL POND
DEEP-WELL INJECTION
SPILLS AND LEAKS
BURIED WASTES
WELL
WATER
TABLE
RIVER
ALLUVIUM
ALLUVIUM
SHALE
SHALE
SANDSTONE
SANDSTONE
FRACTURES

FIGURE 3.—A schematic profile to illustrate some typical processes by which ground-water resources become contaminated.

Toxic contaminants include dozens of inorganic and radioactive elements and compounds, tens of thousands of organic compounds, and numerous bacterial and viral micro-organisms. Among the most commonly occuring toxic contaminants are nitrate, heavy metals, polynuclear aromatic hydrocarbons (from petroleum fuels and coal tar derivities), trichloroethylene and related solvents, pthalates, toluene, and benzene. Ground water is more prone to retain volatile compounds such as trichloroethylene than surface water.

The behavior and fate of contaminants in ground water is governed by a complex matrix of interdependent physical, chemical, and biological processes. Physical processes include ground-water flow and dispersion of the contaminant, evaporation, filtration, and bouyant and phase separations. Chemical reactions include chemical solution/precipitation, hydrolysis, oxidation/reduction, complexation, and ion exchange/sorption. Microbiological effects involve decomposition, cell-synthesis, and transpiration processes.

Although we know something about all these processes, our knowledge is inadequate to make quantitative assessments or predictions of contaminant behavior and fate in most real world systems. We are in need of developing better sample collection and handling techniques and methods for determining key parameters in the field for nearly all the above processes. Considerable effort is needed to understand the relative importance of these processes to the point that we can incorporate simplified models. Also demanding attention is better monitoring technology and enhancement of indirect sensing techniques such as surface geophysical methods.

Can contaminated ground water be cleansed? In many cases, the answer is probably no, at least not economically or completely. However, this is another area about which we know little. In some circumstances, it has been demonstrated that microbial decomposition of some pollutants such as gasoline can be artifically induced or stimulated in the subsurface. Other remedial actions with varying degrees of effectiveness include low-permeability grout curtains, physical removal, and chemical treatment. However, it will always be much easier, cheaper, and more effective to prevent contamination than to clean it up.

IV. USGS PROGRAMS RELATING TO GROUND WATER

The USGS' water-resources program is a balance of data collection and dissemination, problem-oriented water-resource appraisals (interpretive studies), and applied and basic research. This statement focuses on ground-water aspects of the program, emphasizing those elements dedicated to determining the quality of ground water and the status of toxic substances in ground water. As background, the organizational structure and operation of USGS' Water Resources Division (WRD), which has responsibility for the USGS' water functions, will be briefly described.

The mission of USGS' water-resources program is to provide the hydrologic information and understanding needed for the best use and management of the Nation's water resources.

To accomplish its mission, the WRD in cooperation with State, local, and Federal agencies--

- Collects data on a systematic basis to determine the quantity, quality, and use of the Nation's surface and ground water.
- Conducts interpretive water-resource appraisals to predict the consequences of alternative plans for developing land and water resources.
- Conducts supportive basic and problem-oriented research in hydraulics, hydrology, and related fields.

- Develops information on water-related natural hazards such as floods, droughts, volcanoes, mudflows, and land subsidence.
- Coordinates water-data acquisition activities of all Federal agencies.

The WRD is primarily a field organization. General direction of the WRD's program is through four Regional Hydrologists located at Reston, Virginia; Atlanta, Georgia; Lakewood (Denver), Colorado; and Menlo Park, California. The four Regions consist of a total of 46 District Offices which generally are located in State capitals (Figure 4). Each District is headed by a District Chief who is responsible for the planning, programing, and implementation of water-resources investigations within the District.

Research projects support the WRD's mission through study of the physical, chemical, and biological processes that affect the movement and quality of water in the hydrologic cycle. Research is conducted at three of the four regional centers and at District and project offices in other locations as needed.

The USGS conducts its water-quality laboratory analyses in two highly instrumented laboratories in Denver and Atlanta. In 1981, the two laboratories analyzed more than 70,000 individual samples of water.

The WRD's programs are funded as follows (Figure 5): (1) the Federal Program, which is specifically identified in the annual USGS appropriations; (2) the Federal-State Cooperative Program, in which the WRD represents national interests, the cooperating agencies represent State and local interests, and the funding is shared 50/50, with the Federal share coming from direct Congressional appropriations; and (3) the Other Federal Agencies (OFA) Program, which is funded by the agencies that request the work.

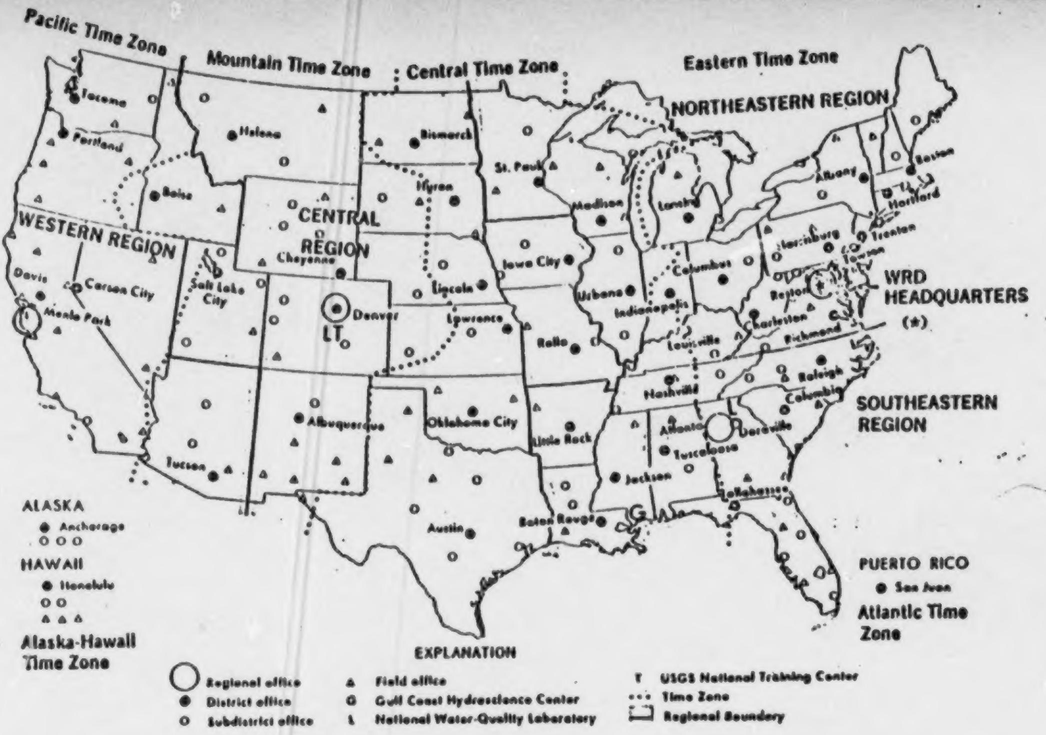
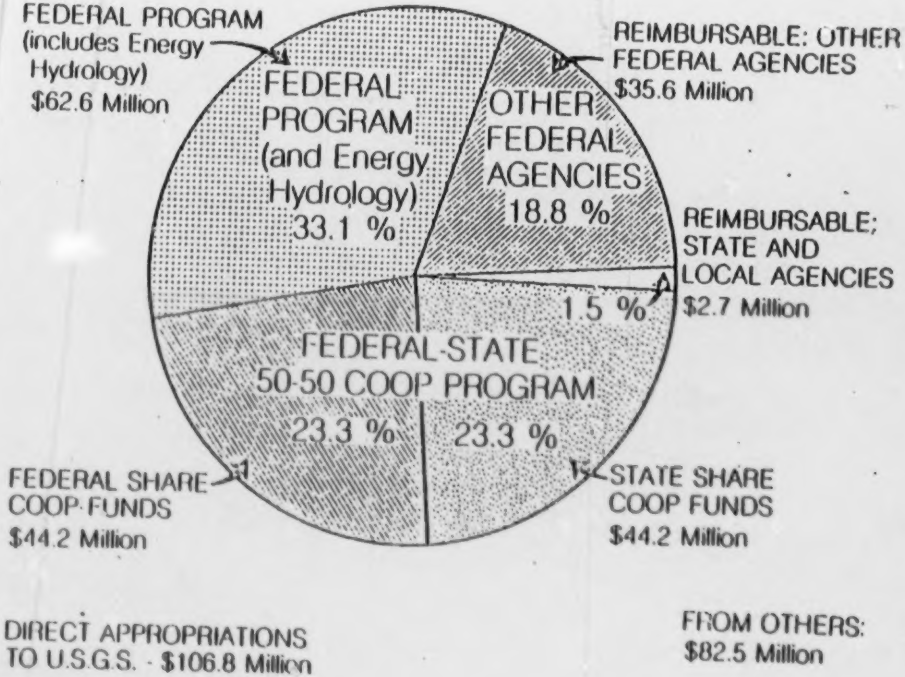

Pacific Time Zone
Mountain Time Zone
Central Time Zone
Eastern Time Zone
NORTHEASTERN REGION
WESTERN REGION
CENTRAL REGION
SOUTHEASTERN REGION
WRD HEADQUARTERS (*)
Tacoma
Portland
Boise
Helena
Bismarck
St. Paul
Huron
Cheyenne
Davis
Carson City
Menlo Park
Salt Lake City
Denver
LT
Lincoln
Lawrence
Iowa City
Madison
Lansing
Urbana
Indianapolis
Columbus
Rolla
Louisville
Charleston
Harrisburg
Albany
Boston
Hartford
Trenton
Towson
Reston
Richmond
Raleigh
Columbia
Nashville
Atlanta
Doraville
Tuscaloosa
Jackson
Tallahassee
Little Rock
Oklahoma City
Albuquerque
Tucson
Austin
Baton Rouge
ALASKA
Anchorage
HAWAII
Honolulu
Alaska-Hawaii Time Zone
PUERTO RICO
San Juan
Atlantic Time Zone
EXPLANATION
Regional office
District office
Subdistrict office
Field office
Gulf Coast Hydroscience Center
National Water-Quality Laboratory
USGS National Training Center
Time Zone
Regional Boundary

Figure 4.--Office locations of the U.S. Geological Survey's Water Resources Division.

Water Resources Division FY 1982



FY 1982 TOTAL $189.3 MILLION

The Federal-State Cooperative Program is a unique partnership for water-resources investigations between the USGS and State and local agencies. This program is the foundation of much of the water-resources management and planning activity in the Nation, and it serves as an early-warning system for the detection of emerging water problems. The Cooperative Program is active in all 50 States, Puerto Rico, Virgin Islands, Guam, and the Trust Territories, and in 1982, there are agreements with more than 800 State and local agencies, at a total funding of more than $80 million. Because USGS performs most of the work, the program leads to a uniform and comparable national water information base.

While most of the WRD's ground-water work consists of areal investigations, basic and applied research is carried out in many fields related to ground water. At present, the research emphasis is on development of models for ground-water flow and solute transport, investigation of geochemical processes in ground water, development of methods of estimating hydraulic parameters, development of new techniques for utilizing borehole geophysics in ground-water applications, and investigations of flow in the unsaturated zone.

Many of the ground-water field investigations undertaken by the USGS are done under the Federal-State Cooperative Program; the investigations funded in this way tend to be problem-oriented and to focus on questions of immediate relevance to local water-supply issues. During fiscal year 1982, 414 Federal-State Cooperative Program field projects are being carried out by the WRD which are at least partially related to ground water; the total budget for ground-water aspects of these investigations is approximately $25 million.

Similarly, ground-water work undertaken for other Federal agencies such as the Department of Defense, the Bureau of Reclamation, or the EPA tends to be local in scale or to focus on particular problems of interest to those agencies. During fiscal year 1982, 115 projects at least partially relating to ground water were undertaken on behalf of other Federal agencies; the total budget for ground-water aspects of these investigations is approximately $5.5 million.

Federally funded USGS programs related to ground water include: the Regional Aquifer-System Analysis (RASA) Program; the Coal Hydrology and Oil Shale Hydrology programs; and two program elements related to waste disposal and ground-water contamination, the Radioactive Waste Program and the Toxic Wastes-Ground-Water Contamination Program.

The RASA Program is a systematic effort to study a number of regional ground-water systems, which collectively account for most of the ground-water resources of the country. Fifteen investigations are currently in progress under this program, as shown in figure 6; two new investigations will be initiated next fiscal year. The studies are regional in scope and attempt to define the overall characteristics of the flow system, the general water-quality situation, regional patterns of utilization, and the overall nature of the response to development.

While each study is designed to fit the particular problems of the study area, the general approach is to develop a computer simulation for the overall aquifer system, supported by more detailed simulations of local or subregional problem areas.

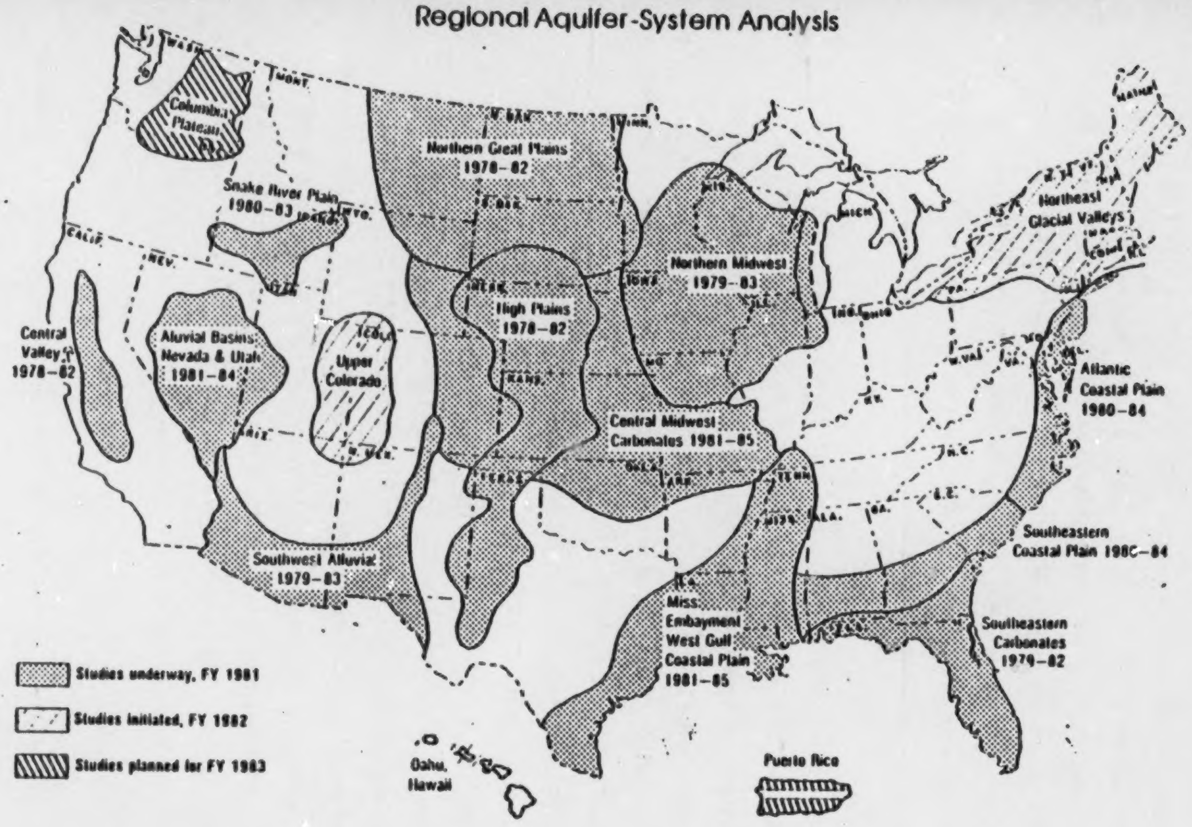

Regional Aquifer-System Analysis
Columbia Plateau
Northern Great Plains 1978–82
Snake River Plain 1980–83
Northern Midwest 1979–83
Northeast Glacial Valleys
High Plains 1978–82
Central Valley 1978–82
Aluvial Basins Nevada & Utah 1981–84
Upper Colorado
Central Midwest Carbonates 1981–85
Atlantic Coastal Plain 1980–84
Southeastern Coastal Plain 1980–84
Southwest Alluvial 1979–83
Miss. Embayment West Gulf Coastal Plain 1981–85
Southeastern Carbonates 1979–82
Studies underway, FY 1981
Studies initiated, FY 1982
Studies planned for FY 1983
Oahu, Hawaii
Puerto Rico

Figure 6 .--Location of U.S. Geological Survey Regional Aquifer Systems Analyses studies

These simulations serve a twofold purpose: (1) they assist in forming an understanding of the natural (prepumping) flow regime, and of the changes brought about in it by human activities; and (2) they provide a means of predicting hydraulic effects of future pumpage, artificial recharge, waste disposal or other stress, and thus provide some of the basic information required for water management. In some studies, certain associated effects, such as land subsidence or seawater intrusion, may form the subject of corollary simulations.

The simulations are based upon a full assemblage of existing data, and upon such new data as required to fill critical gaps in the available information. In some cases, collection of these new data requires extensive field operations.

Information is also being assembled on the quality of water throughout each aquifer system, again by bringing together all existing information and collecting such field data as required to fill the gaps. An effort is being made to interpret this water-quality information in terms of the original flow pattern and the changes that have occurred in response to development, as inferred from the hydraulic simulations. Using the water-quality data in conjunction with predicted flow patterns as derived from the hydraulic models, some insight may be gained into future quality problems.

The regional studies actually complement and assist the more detailed local studies undertaken through the Federal-State Cooperative Program of the WRD. In particular, each regional analysis provides a framework--geologic, hydraulic and geochemical--for local investigations. In terms of simulation, the regional model offers a method of evaluating boundary flows, both lateral and vertical, for local models. In terms of water quality, an understanding of the regional flow pattern, and of the geochemical processes that occur along the flow path, provides a background for the study of local water chemistry.

Products from each study consist of a series of reports, beginning with summaries of data as they are assembled, and culminating in interpretive reports including the results of predictive simulations.

The Coal and Oil Shale Hydrology programs are designed to provide information on the water resources available for coal and oil shale development, and on the water resources problems which may be generated by that development. Ground-water quality aspects of these two programs address three principal investigative areas: (1) the quantity and quality of water that now exists in the areas that are likely to be mined; (2) the impacts of mining on the quality of existing water; and (3) the fate of the contaminants generated as a result of the energy development process. Specific activities include (1) data collection at several thousand sites in the principal coal and oil shale areas in the Nation, (2) areal studies to better understand the hydrology of the diverse areas where coal and oil shale are mined or retorted, (3) research into the development of better interpretive and modeling techniques for predicting impacts of present or anticipated mining, reclamation and other land uses; and in laboratory techniques to determine the chemical character of leachates emanating from piles of coal waste and retorted oil shale.

The USGS' Radioactive Waste Program has addressed the geologic and hydrologic concerns of nuclear waste disposal for several years. This program is aimed at: (1) helping the Department of Energy select suitable sites for high-level waste repositories; (2) developing better earth-science guidelines for low-level waste disposal sites; (3) providing technical assistance to States in the selection, design and operation of low-level waste sites; and (4) assisting other Federal agencies such as the Department of Energy, the U.S. Nuclear Regulatory Commission, and the EPA in assessing current and potential impact of nuclear waste disposal activities on ground-water quality.

In recognition that the present knowledge regarding toxic substances in ground water is inadequate, the USGS recently initiated a Toxic Wastes-Ground Water Contamination Program. The President's budget calls for a funding level of $4.5 million in fiscal year 1983 for the continuation of this program. To direct this program as well as water related aspects of the Radioactive Waste Program, an Office of Hazardous Waste Hydrology was established in the WRD.

The following briefly describes the major elements of the Toxic Wastes-Ground Water Contamination Program:

1. Appraisal of existing ground-water quality--This element includes the production of initial appraisals of natural and existing ground-water quality in individual States. Information will be included on ground-water quality in specified aquifers, waste-disposal sites and activities (as identified by State and Federal agencies), water levels, ground-water withdrawals and use, and the general rate and direction of ground-water flow. An assessment and description of the vulnerability of aquifers to contamination in the near- and long-term will be included. The USGS intends to publish reports on these appraisals. We expect to complete the initial appraisals for all 50 States by 1986.

2. Improving the understanding of geologic and hydrologic processes that control the behavior and fate of contamination in ground water--This information is needed so that waste-disposal techniques can be improved and problems arising from improper disposal of wastes can be identified and mitigated. Both proper disposal of hazardous waste and mitigation of contamination problems are strongly dependent on the properties of the specific aquifer and on the types of contaminants. Practical solutions require that principles of hydraulics, geochemistry, and microbiology be integrated to successfully study the complex systems found in nature. This program element will investigate several representative field problems to: (a) improve monitoring, sampling, and "exploration" procedures; (b) develop innovative techniques to neutralize, immobilize, or remove contaminated ground water; (c) assess the overall reliability and value of predictive models for ground-water pollution; and (d) evaluate operational and monitoring strategies for ground-water quality restoration projects.

3. Identification of areas potentialy suitable for the storage of hazardous wastes.--This element will involve: (a) identification of several specific hydrologic environments within each State that are the most preferable for waste disposal within that State; and (b) definition of geologic and hydrologic guideline criteria for site selection, including relations between the criteria and waste type for each general area identified in item (a). At the outset, meetings will be held with representatives of State governments to explain the program and seek their participation. For States requesting the program, an advisory committee will be established to include members from State government, industry, and other Federal agencies. The USGS will aim to identify, in each State, as many as half a dozen areas whose hydrogeologic environment provides multiple natural

barriers, such as those identified in Figure 7, to the movement of toxic wastes. Results of the USGS reconnaissance work will be made available to counties and cities in addition to the appropriate State agencies. Further study, including selection of individual sites for detailed study and the development of engineering and construction codes, will be the responsibility of State and local governments.

Products of the Toxic Wastes-Ground Water Contamination Program include (a) project directories to identify what has and is being done within the USGS in connection with hazardous-waste studies; (b) derivative report and map products designed for ease of understanding and use by public and private sector planners and decisionmakers; and (c) workshops, symposia, and conferences to bring together managers, planners, engineers, and scientists concerned with the development, siting, design, operation, and monitoring of land-disposal facilities for toxic wastes.

The USGS programs relating specifically to waste disposal and ground-water contamination also include work funded by other Federal agencies and cooperative studies with State and local agencies. All of these ground-water quality programs involve rapidly changing technologies and very difficult scientific challenges. Unlike surface waters which can be monitored to provide information about regional changes in water quality, ground water cannot effectively be monitored on a regional or national scale for comparable evaluations of the status of ground-water contamination. Ground-water velocities are usually very small, and pollution of ground water tends to occur in slowly developing pockets around point sources of contamination or in shallow, slowly-expanding zones beneath areas of nonpoint pollution.

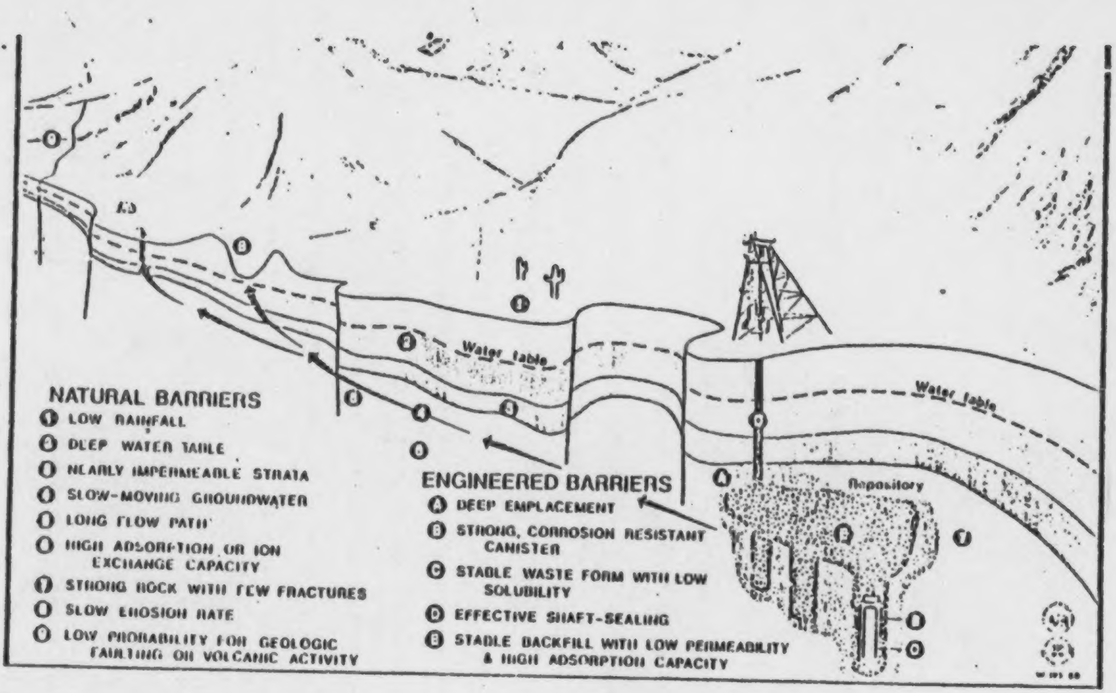

Water table
Water table
Repository
NATURAL BARRIERS
LOW RAINFALL
DEEP WATER TABLE
NEARLY IMPERMEABLE STRATA
SLOW-MOVING GROUNDWATER
LONG FLOW PATH
HIGH ADSORPTION OR ION EXCHANGE CAPACITY
STRONG ROCK WITH FEW FRACTURES
SLOW EROSION RATE
LOW PROBABILITY FOR GEOLOGIC FAULTING OR VOLCANIC ACTIVITY
ENGINEERED BARRIERS
A DEEP EMPLACEMENT
B STRONG, CORROSION RESISTANT CANISTER
C STABLE WASTE FORM WITH LOW SOLUBILITY
D EFFECTIVE SHAFT-SEALING
E STABLE BACKFILL WITH LOW PERMEABILITY & HIGH ADSORPTION CAPACITY

Figure 7 --The multi-barrier approach to radioactive waste isolation.

Because of the nature of the emplacement process, the actual volumes of contaminated ground water tend to remain small for long periods of time in comparison to the total volume of ground water circulating through the earth. Thus, a monitoring strategy in which samples are collected from observation wells chosen for areal coverage would fail to detect most developing contamination problems until a great deal of damage had been done. Moreover, a simple monitoring effort, without prior analysis and interpretation, is virtually guaranteed to fail, if for no other reason than the directions of flow away from a contaminant source must be understood before an efficient monitoring program can be designed.

The alternative strategy to monitoring, is to study areas where point and nonpoint sources of pollution are known or suspected to be affecting ground-water quality. This is the approach which the USGS has taken in virtually all of its work related to ground-water contamination. The emphasis has been on analysis of the hydrologic and geochemical processes affecting the movement of water and its constituents in different hydrogeologic settings, in order to develop the scientific know-how for effectively and efficiently predicting contaminant fate and movement.

In the past, ground-water contamination studies conducted by the USGS have focused on both toxic and nontoxic wastes. A few examples of studies involving toxic wastes include the investigation of a 4,300 foot long leachate plume containing hexavalent chromium and cadmium which formed downgradient from an industrial area on Long Island (Ku and others, 1978); the movement of chemical contaminated ground water near the Rocky Mountain Arsenal, Colorado (Konikow, 1977); the movement, alteration, and fate of industrial organic substances in ground water following injection through industrial wells near Wilmington, North Carolina (Leenheer and others, 1976); and near Pensacola, Florida (Ehrlich and others, 1979); the levels of various toxic metals in drainage from abandoned mines in Colorado (Wentz, 1974); isolation and characterization of TNT in ground water in Nevada (Pereira and others, 1979); and the study of leachate migration from a pesticide waste-disposal site in Hardeman County, Tennessee (Sprinkle, 1978).

In addition to process-oriented, site-specific studies such as those listed above, the USGS has undertaken studies specifically to assist the EPA. In January 1977, an interagency agreement was signed stating that the USGS would assist EPA's Office of Drinking Water in gathering hydrologic data required to designate "sole source" (or principal source) aquifers under Section 1424 (e) of the Safe Drinking Water Act. The information required for each study includes: (1) a detailed description of the aquifer, and (2) background data on drinking-water sources for the area presently using the potential aquifer. To date, the USGS has completed seven sole-source aquifer projects for EPA. Two new studies are now being initiated--the Delaware Basin Aquifers in Southeastern New Mexico and Western Texas, and the aquifers in Southeastern Louisiana and Southwestern Mississippi.

Another interagency agreement was signed on May 1, 1981, in which USGS agreed to provide technical assistance, information, and in some cases, court testimony, on the geology and ground-water conditions at hazardous waste sites to EPA's Office of Solid Waste and Emergency Response. To date, EPA has requested the USGS provide assistance on cases in Niagara Falls, New York; Jacksonville, Arkansas; Bridgeport, Pennsylvania; St. Louis Park, Minnesota; and New Brighton and Koppers Coke, Minnesota.

V. ROLES OF STATE AND LOCAL GOVERNMENT IN GROUND-WATER PROTECTION

States generally have the legal authority over ground-water development and management. However, laws vary widely from State to State and may or may not include water-quality criteria. States can also assume primacy for certain Federal ground-water protection regulations such as those developed in response to the Resource Conservation and Recovery Act. It is clear that States have an important, but variable role in responsibilities and activities relating to ground-water quality. It is therefore necessary, we believe, that every State maintain some in-house technical expertise in ground-water.

Current capabilities among States in this regard range from those having well-staffed and well-equipped programs capable of addressing virtually all State ground-water technical concerns to States with such minimal capability that they are dependent on outside assistance for most ground-water concerns.

Although it is theoretically possible for every State to be self-sufficient in meeting most of its ground-water technical needs, in some States this would require a major change in budget and program priorities. There are some aspects of ground-water technology in which most States do not have, nor can be expected to develop, adequate expertise, such as broad-based interdisciplinary research programs and regional interstate geological and hydrological studies.

The role of the USGS in relation to State and local concerns includes these principal functions in the field of ground-water contamination:

- o A broad-based research and technology development program aimed at supplying state-of-the-science information and techniques to States and other agencies, especially with regard to disposal of toxic wastes.
- o Large regional interstate geological and hydrological studies such as those in the RASA Program.
- o Technical support to State and local agencies in specific areas of need, primarly through our Federal-State Cooperative Program. In that Program, the USGS' nationwide expertise, laboratories, and research facilities become available to States on a 50/50 shared cost basis.

VI. CLASSIFICATION OF GROUND-WATERS

Ground water has been classified under various criteria for several special purposes. EPA has classified several aquifers as "sole source" for public drinking-water supply under the Safe Drinking Water Act, and some aquifers have been designated to receive industrial wastes under the Injection Control Act. In addition, a few States have developed classification systems in an attempt to control the quality of their ground water. However, establishing and maintaining a classification system is not an easy task.

Classification of ground waters is rendered difficult by the fundamental unity of the ground-water flow system, and by its dynamic nature. Ground water is constantly in motion, from one area to another and from one aquifer or geologic unit to another. A classification scheme would presumably specify that the water in a particular aquifer, within a certain geographic area, is worthy of protection, while that in other geologic units or areas is not. However, under conditions of pumping stress as well as natural flow, water may move from unprotected zones to protected zones, and vice versa. It is difficult to conceive how a classification scheme could adequately address the range of possibilities generated by this characteristic of the system.

A further problem with ground-water classification schemes is that they would fail, in many cases, to protect surface waters from contamination by polluted ground water. As noted earlier in this statement, shallow patterns of ground-water circulation tend to disharge locally to small streams. Very often these patterns of shallow circulation occur through geologic units which will not yield significant quantities of water to a well, and in which the ground water would not normally be classified as worthy of protection. Yet if the water in these units becomes contaminated, the local ground-water flow pattern may establish a steady feed of contaminants into the surface stream draining the area, creating problems for downstream users.

As noted earlier, one facet of the USGS Toxic Wastes-Ground Water Contamination Program embodies a screening effort in which broad areas of low risk are to be identified. Some of such areas might well turn out to contain aquifers worthy of protection, if the evidence indicates that those aquifers are isolated from the disposal areas by multiple natural barriers. Among the factors which we propose to consider in the screening process are:

- ground-water recharge, flow, and discharge patterns.
- permeability, storage, and dispersive properties of aquifers and aquitards.
- chemical quality of "ambient" ground water.
- geochemical controls on water quality.
- adsorptive properties of confining units.
- geochemical processes in the unsaturated zone which may influence the fate of contaminants.
- stream-aquifer relationships.
- existing and potential patterns of ground-water development.

As an alternative to aquifer classification, the USGS recommends a systems approach to land-use planning and zoning, in which the risk to ground-water supplies from various land-use options, such as waste disposal, can be analyzed and weighed. Appropriate zoning recommendations or classifications can then be made to minimize risks.

REFERENCES

Brown, Philip M., and Reid, Marjorie S., 1976 Geologic Evaluation of Waste-Storage Potential in Selected Segments of the Mesozoic Aquifer System Below the Zone of Fresh Water, Atlantic Coastal Plain, North Carolina Through New Jersey: U.S. Geological Survey Professional Paper 881, 47 p.

Cushing, E. M., Kantrowitz, I. H., and Taylor, K. R., 1973, Water Resources of the Delmarva Peninsula: U.S. Geological Survey Professional Paper 822, 58 p.

Ehrlich, G. G., Godsy, E. M., Pascale, C. A., and Vecchioli, John, 1979, Chemical Changes in an Industrial Waste Liquid During Post-Injection Movement in a Limestone Aquifer, Pensacola, Florida: Ground Water - Reprint from the November-December 1979, Volume 17, Number 6 issue.

Franke, O. L., and McClymonds, N. E., 1972, Summary of the Hydrologic Situation on Long Island, New York, as a Guide to Water-Management Alternatives: U.S. Geological Survey Professional Paper 627-F, 59 p.

Konikow, L. F., 1976, Preliminary Digital Model of Ground-Water Flow in the Madison Group, Powder River Basin and Adjacent Areas, Wyoming, Montana, South Dakota, North Dakota, and Nebraska: U.S. Geological Survey Water-Resources Investigations 63-75, 44 p.

_____, 1977, Modeling Chloride Movement in the Alluvial Aquifer at the Rocky Mountain Arsenal, Colorado: U.S. Geological Survey Water-Supply Paper 2044, 43 p.

Ku, Henry F. H., Katz, Brian G., Sulam, Dennis J., and Krulikas, Richard K., 1978, Scavenging of Chromium and Cadmium by Aquifer Material - South Farmingdale-Massapequa Area, Long Island, New York: Ground Water - Reprint from the March-April 1978, Volume 16, Number 2 issue, pp. 112-118.

Leenheer, Jerry A., Malcolm, Ronald L., and White, William R., 1976, Investigation of the Reactivity and Fate of Certain Organic Components of an Industrial Waste after Deep-Well Injection: Environmental Science and Technology, Volume 10, Number 5, p. 445, May 1976.

Luckey, Richard R., Gutentag, Edwin D., and Weeks, John B., 1981, Water-Level and Saturated-Thickness Changes, Predevelopment to 1980, in the High Plains Aquifer in Parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas and Wyoming: U.S. Geological Survey Hydrologic Investigations Atlas 652.

Malcolm, R. L., Aiken, G. R., Thurman, E. M., and Avery, P. A., 1980, Hydrophilic Organic Solutes as Tracers in Groundwater Recharge Studies: Contaminants and Sediments, Volume 2: in Robert A. Baker, ed., Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan.

McGuinness, C. L., 1963, The Role of Ground Water in the National Water Situation: U.S. Geological Survey Water-Supply Paper 1800, 1121 p.

Mundorff, M. J., Crosthwaite, E. G., and Kilburn, Chabot, 1964, Ground Water for Irrigation in the Snake River Basin in Idaho: U.S. Geological Survey Water-Supply Paper 1654, 224 p.

Pereira, W. E., Short, D. L., Manigold, D. B., and Roscio, P. K., 1979, Isolation and Characterization of TNT and Its Metabolites in Groundwater by Gas Chromatograph-Mass Spectrometer-Computer Techniques: Bull. Environm. Contam. Toxicol. 21,554-562 (1979).

Poland, J. F., Lofgren, B. E., Ireland, R. L., and Pugh, R. G., 1975, Land Subsidence in the San Joaquin Valley, California, As of 1972: U.S. Geological Survey Professional Paper 437-H, 78 p.

Sprinkle, C. L., 1978, Leachate Migration from a Pesticide Waste Disposal Site in Hardeman County, Tennessee: U.S. Geological Survey Water Resources Investigations 78-128 (open-file report), 35 p.

Stringfield, V. T., 1966, Artesian Water in Tertiary Limestone in the Southeastern States: U.S. Geological Survey Professional Paper 517, 226 p.

U.S. Geological Survey Professional Paper 813-A through T, Summary Appraisals of the Nation's Ground-Water Resources.

Geraghty & Miller, Inc.
CONSULTING GROUND-WATER GEOLOGISTS AND HYDROLOGISTS

North Shore Atrium
6800 Jericho Turnpike
Syosset, New York 11791
Cable: WATER
Telephone: 516/921-6060

Testimony By: David W. Miller
Before the Toxic Substances and Environmental
Oversight Subcommittee of the Environment
and Public Works Committee Hearing, July 28, 1982

My name is David W. Miller and I am a principal in the firm of Geraghty & Miller, Inc., Syosset, New York. I am a professional geologist with over 30 years experience in the ground-water field. My firm conducts studies and investigations throughout the United States and overseas relating to the development, management, and protection of ground-water resources. We provide consulting services to industries, mining companies, public utilities, and government at all levels.

I have been asked today to present information on the cost and feasibility of various techniques available to clean up contaminated aquifers. I must preface my remarks with the statement that restoration of a badly contaminated aquifer to drinking-water quality is seldom undertaken and rarely achieved. The majority of remedial efforts currently under way could be more accurately characterized as containment programs that result in only partial cleanup of the aquifer. They involve removal of the primary source of contamination such as a leaky lagoon, discarded drums, or body of spilled petroleum product. Geohydrologic investigations to determine the extent of contamination are then undertaken, followed in most cases by some action to monitor or limit the spread of the contaminated ground water.

The technology to remove some of the common ground-water contaminants is available today but is most cost-effectively applied at the water-supply wellhead. In view of the large volumes of water that would have to be pumped to remove and purify contaminated ground-water, complete restoration of the aquifer is in most cases not economically feasible.

The costs of cleanup and containment techniques are so site-specific that it would be pointless to spend time reciting costs for each approach discussed below. Instead, I will give you ranges of costs for investigating and cleaning up a ground-water contamination problem.

Hydrogeologic investigations to define contamination problems can cost from $25,000 to $250,000. Litigation may lead to a doubling of this cost. The minimum cost of the ground-water phase of a partial cleanup and containment project is $500,000. Average costs for a typically complex plume of contaminated ground water range from $5 to 10 million per site. The cost of total restoration of a badly contaminated aquifer to potable quality could be orders of magnitude greater, with time for completion measured in decades.

BATON ROUGE, LA HOUSTON, TX TAMPA, FL WEST PALM BEACH, FL ANNAPOLIS, MD HARTFORD, CT SAVOY, IL

Present costs for treatment of public water supplies contaminated with organic contaminants range from $1.50 to $4.00 per month per family served. Research and development efforts to reduce costs of treatment can be expected to be stepped up in recognition of the high cost and difficulty of aquifer restoration.

In the following sections I will briefly describe the technical approaches available for containment of contaminated ground water, along with comments on their effectiveness and relative cost.

Containment Techniques

A body of contaminated ground water, or plume, can be contained in several ways. One approach is to impound the plume behind subsurface physical barriers. An alternative is to alter the ground-water flow system by hydraulic methods. In some cases a plume can be neutralized or immobilized in place by subsurface injection of chemical or biological agents.

Physical containment methods include construction of slurry walls, or cement-filled trenches, around the plume. Barrier walls can also be constructed by a vibrating beam method or injection of cement into the soil through small-diameter wells. To be effective, the barrier must be tied into an underlying bedrock or low permeability formation. The contaminated area must also be capped with clay or other impermeable material to limit infiltration of rainfall. Since no man-made or natural formation can be considered absolutely impermeable, some form of continuous low-level water withdrawal from within the impounded area may also be required.

Physical containment can be quite effective under ideal conditions, but its feasibility is severely reduced in hard-rock conditions or sites where the contamination extends below 100 feet. Initial costs are high, but operation and maintenance is minimal.

Wells and drains can be used to contain contaminated ground water by altering the natural flow system. The general concept is to intercept the moving plume or draw contaminated water into recovery wells. The water can then be discharged off-site or re-injected on-site, with or without treatment. As long as operation of a properly-designed pumping system is continued, contamination can be effectively contained by this technique. Over the long term, a moderate level of aquifer rehabilitation can be achieved if contaminated water is discharged off-site or treated and re-injected on-site.

Costs of construction of hydraulic containment systems are less than physical containment systems. Operation and maintenance are high, particularly if treatment and disposal of large volumes of contaminated groundwater are involved. Also, the system must be operated perpetually.

Some contaminants can be immobilized or degraded in the ground by injection of chemical or biological substances. The injected substances must be waste-specific and designed to digest, precipitate, or otherwise neutralize contaminants. For example, some heavy metals can be rendered insoluble by addition of alkalis or sulfides. Natural microbial digestion of some organic contaminants can be enhanced by injection of oxygen and nutrients. These procedures are frequently suggested but eliminated in many areas because of the difficulty in achieving uniform distribution and mixing of substances in the subsurface environment. In very few instances have these procedures been successfully employed to produce potable water.

In the sense of permanently eliminating the potential for movement of a plume, total-containment is probably impossible. All installed sub-surface walls and barriers will eventually deteriorate and leak. Perpetual operation of a pumping system, although feasible, would impose substantial economic burdens on future generations. Finally, it must be recognized that from a practical standpoint, some plumes cannot be blocked, immobilized, pumped out, or excavated. They will simply have to be left as they are, slowly moving through ground-water systems. Monitoring of the rate and direction of travel of such plumes will have to be relied upon to provide the safeguards needed for protecting public health and the environment.

Aquifer Restoration by Treatment

The concept of restoring a contaminated aquifer through water treatment processes appears to be briefly dismissed in my opening remarks. This is not to say that such projects are not being attempted. The problem is that it is impossible to design a pumping well system that will capture only the contaminated water in the plume. A pumping well draws from all directions. It mixes water from the intercepted plume with clean water from other regions of the aquifer. This factor alone can require pumping and treatment of many times the volume of a plume before all of the contaminants are removed. To complicate the problem further, the movement of some contaminants is retarded by the soil and some geologic formations are difficult to pump because of their low permeability.

Even though the technology is available to eventually capture all contaminants by a recovery well system, seldom can the cost of this approach be supported by private or public funds. Treatment for purposes other than use for potable supply is, therefore, generally limited to situations where pumpage of contaminated water is required for plume containment. Treatment levels are selected to protect the surface water body or sewage treatment plant to which the pumped water is discharged.

Closing Comments

The bill under consideration by this Committee would authorize expenditure of federal funds for the development and implementation of programs to protect sole source aquifers. For many years I have advocated comprehensive water quality planning and preventive controls as the most effective means of protecting drinking water supplies. The bill correctly identifies land aquisition and land use controls in critical recharge areas as essential components of aquifer protection.

Many effective ground-water protection projects have already been initiated by state and local governments under funding provided through section 208 of the Clean Water Act. My firm has been directly involved in tracking and assisting more than 25 "Ground-Water Prototype Projects".funded through this program. While some criticism has been leveled at the 208 program, I wish to call your attention to the innovative approaches and effective local actions which have been fostered through this effort. These range from adopting local health ordinances controlling underground storage of gasoline and obtaining voluntary compliance with agricultural best management practices to developing of comprehensive ground-water management strategies and monitoring programs at the state level.

The objectives and accomplishments of the 208-funded ground-water prototype projects are described briefly in the packet of project descriptions I am providing to your committee. I would encourage any federal efforts to provide funding and support for a continuation of this kind of ground-water protection program at the state and local level.

TESTIMONY BY THOMAS P. FOX,

GENERAL MANAGER OF THE EDWARDS UNDERGROUND WATER DISTRICT, TEXAS

CONCERNING THE

EDWARDS AQUIFER

AND THE

EDWARDS UNDERGROUND WATER DISTRICT

BEFORE THE

TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT SUBCOMMITTEE

OF THE

ENVIRONMENT AND PUBLIC WORKS COMMITTEE

UNITED STATES SENATE

JULY 28, 1982

I. BACKGROUND AND OPERATIONAL EXPERIENCE OF THE DISTRICT

A. General Background

Ground water is one of Texas' most valuable resources. Approximately 70% of the water currently used in Texas is ground water. Since ground water has been and continues to be so important in Texas, the state has taken steps to provide for the protection of this resource. The Underground Water Conservation Districts Act of 1949 was enacted by the Texas State Legislature to provide for the creation of underground water districts as a means of local management of ground water resources.

One of the state's unique ground water systems is known as the Edwards Aquifer. The aquifer is located in central Texas along the Balcones Escarpment which is part of the Texas Hill Country and extends approximately 250 miles from near Del Rio on the Rio Grande River to Temple, Texas. The San Antonio portion of the aquifer extends some 175 miles from Brackettville to Kyle, Texas.

The Edwards Aquifer is a porous, fractured limestone formation approximately 500 feet thick. The porous nature of the limestone permits the movement and storage of large quantities of water and is characterized by relatively rapid replenishment or recharge. The average annual recharge for the period 1934 to 1980 is estimated to be 595,000 acre-feet per year.

The area where most of the surface water enters the ground is called the Recharge Zone and is the outcrop of the Edwards and Associated limestones at the earth's surface. Most of the streams crossing this Recharge Zone lose their base flow and much of their flood flow to the Aquifer.

The Edwards Aquifer is considered among the most productive aquifers in the Southwestern United States, supplying high quality water to more than one million persons in Medina, Uvalde, Bexar, Comal and Hays Counties for municipal, industrial, agricultural and recreational purposes.

The severe drought in Texas during the 1950's caused water levels in the Edwards Aquifer to drop significantly , resulting in the elimination of the flow of Comal Springs in New Braunfels for a period of time. This natural resource is so important that the people of this five-county region more than three decades ago recognized the need to protect their water supply and did something about it. No state or federal law mandated that a conservation district be created. The residents of this area saw a problem and the need for a solution. Proposals were first submitted to the State Legislature in 1957 to create a ground water district. Because of honest differences of opinion about the organization of the District, the legislation did not pass in that session. The people continued to work together. Some favored forming a district under the 1949 Underground Water Conservation District's Act. That Act gives districts the power to regulate well spacing and production, and that power was not acceptable to all of the citizens. A compromise was worked out among the participants.

The result of these efforts was the creation of the Edwards Underground Water District by the State Legislature in 1959 to "conserve, protect, and recharge the underground water-bearing formation within the District and to prevent waste and pollution of such underground water."

The creation of the District represents local self-government at its finest. A spirit of cooperation for conservation has been maintained for more than 20 years by the 15-member Board of Directors of the District. Throughout this period the board has shown a high degree of consistency in carrying out the legislative mandate to "conserve, protect, and recharge" and to "prevent waste and pollution."

(A copy of the District's enabling statute is
included as Attachment A.)

B. Research, Studies and Cooperative Projects

1. Data Collection

One of the most important functions of the Edwards Underground Water District is the collection of basic information about the ground water system. Information about the location of the water-bearing formations, water depths, water quality and flow patterns is useful to the residents and is extremely important for identifying potential problems and solutions.

Ground water in aquifers with rapid recharge capability such as the Edwards can easily become contaminated. Special efforts should be made to protect the recharge of these aquifers. Protective measures are best taken on a local or state basis because the local governmental units whose residents depend on the water source are generally more aware of the threat and more immediately responsive to the needs and desires of those residents.

The Board of Directors of the Edwards Underground Water District realized immediately upon organization in 1959 that the most important first step for the District to take would be to gather and disseminate information about the aquifer. They soon learned that this process was a continuing one even though many studies from previous years were public information. Changes in population and urban development brought about changed attitudes concerning the need for further study and additional monitoring.

The United States Geological Survey, both as an independent agency, and in cooperation with various other agencies, has conducted extensive studies of the Edwards Aquifer since 1898. The District, in cooperation with the United States Geological Survey and other agencies, has continued studies of the aquifer since 1960. These studies and data collection efforts have dealt primarily with water quality and quantity of the Edwards Aquifer. Special studies have been conducted on the effects of urban runoff on streams within the Recharge Zone.

One of the first major studies done by the District was done in cooperation with the Corps of Engineers from 1961 to 1965 to learn more about the aquifer system and to develop a plan of operation, mainly a plan for augmentation of natural recharge, which could be conducted and financed within the District's tax structure.

Another major study undertaken by the District in 1978 was in recognition of the need for more information on possible pollution from septic tanks in the recharge zone. That year the District authorized a study of a model Evapotranspiration System as an alternative to septic tanks. This study also resulted in recommended design criteria for evapotranspiration disposal systems.

A study in 1976 was undertaken to determine the pollution potential of hydrocarbon transmission lines crossing the recharge zone.

The District alone and in cooperation with local, state and federal agencies, has published more than forty technical reports in the past twenty years. Reports on recharge volume, discharge and water quality of surface and ground water are published annually. The District's expenditures for studies and data collection has totaled over $1.1 million.

2. Protective Rules

a. Development

In 1968, the Board of Directors of the Edwards Underground Water District became increasingly concerned about the potential for contamination of water in the recharge area of the Edwards Aquifer.

The Directors unanimously adopted a resolution in 1969 stating that it was the policy of the Edwards Underground Water District to take such action as was found necessary to prevent the pollution of the Edwards Underground Reservoir in the five county areas of the District.

Working in cooperation with all other agencies concerned with this common problem, District staff drafted a tentative standard for construction of sewage plants and collection systems in the recharge zone. The problem of proliferation of septic tanks in urban areas was studied and suggestions for action to prevent health hazards were prepared.

Maps of the recharge zone of the Edwards Aquifer were prepared and along with advisory proposals for construction of sewage plants and use of septic tanks were made available in the five county area.

A state requirement that all municipalities discontinue the burning of trash and garbage not later than July 1, 1969, forced the municipalities in the District area to seek sanitary landfill solid waste disposal sites. Subsequently on March 18, 1969, the Directors of the District unanimously adopted a resolution authorizing the Manager to take such action as was found appropriate to insure that proper authorities require permits for landfill sites for disposal of wastes in the Balcones Fault Zone within the geographical limits of the Edwards Underground Water District. Funds were made available for District inspection of these landfill sites. This responsibility is currently a responsibility of the Texas Department of Water Resources and the Texas Department of Health.

The District, along with the Texas Water Development Board and the Texas Water Quality Board developed proposed rules for development over the aquifer recharge zone in September, 1969. These proposed rules established restricted zone, promulgated rules and regulations for disposal of wastes, and designated the Edwards Underground Water District as its agent to perform the administrative functions related to the order.

After considerable debate throughout the District area, changes were proposed by the District and other governmental units. Various review committees were formed and after many revisions and redrafts, the first rules for development over the Edwards Aquifer Recharge Zone were passed by the Texas Water Quality Board on July 31, 1970.

The first "board order" as it is commonly referred to, was continually reviewed and revised into board orders of 1974, 1975 and 1977.

b. Current Rules

The "Board Order" presently in use remains virtually unchanged from that passed in 1977. It is now officially referred to as Rule 156.20 of the Texas Water Development Board. Basically Rule 156.20 contains provisions relating to the following matters:

1) Definitions
2) Methods of Authorization - all waste disposal
3) Waste collection, Treatment and Disposal Systems
4) Private Service Laterals on Organized Sewage Collection Systems located within the Recharge Zone
5) Licensing Requirements for New Private Sewage Facilities
6) Existing Private Sewage Facilities
7) Connection of Private Sewage Facilities to Organized Waste Collection, Treatment and Disposal Systems
8) Subdivision Plans
9) Additional Requirements of a Subdivision Using Private Sewage Facilities
10) Hydrocarbon and Toxic or Hazardous Chemical Storage Facilities and Transmission Lines on the Recharge Zone
11) Areas Above the Recharge Zone
12) Terms and Conditions for Granting Exceptions
13) Designation of Agents
14) Responsibilities of the Edwards Underground Water District
15) License, Inspection and Renewal Fees
16) County Wide Regulations
17) Penalty Clause

Under Rule 156.20, the Edwards Underground Water District is authorized to:

(a) Provide maps on which the recharge zone has been located, which correspond with maps located in the offices of the Executive Director of the Texas Department of Water Resources.

(b) Assist the licensing authorities upon request for assistance in carrying out provisions of these rules.

(c) Conduct such geological investigations as are necessary to continually update the boundaries of the recharge zone and artesian zone.

(d) Monitor the quality of the water in the reservoir.

The Edwards Underground Water District, in accordance with the requirements set forth in its enabling statute, undertakes additional pollution prevention measures. It maps all development, sewer lines, recharge and flood control facilities, caves, sinkholes and stream beds in the Recharge Zone, and tabulates all sewer system connections. These efforts are being carried out pursuant to a Memorandum of Understanding between the Texas Department of Water Resources and the District.

3. Petroleum Exploration Monitoring

The increased price of oil and gas has resulted in an increase in oil and gas exploration in the area of the Edwards Aquifer. The Texas Railroad Commission has the responsibility to monitor these activities. Because such exploration represents a potential source of contamination of the Edwards Aquifer, the Edwards Underground Water District's Board of Directors has requested that the Texas Railroad Commission strictly enforce the drilling regulations. The District also keeps a close watch on the drilling activity within the District area.

4. Surface and Ground Water Monitoring

The water quality in the Edwards Aquifer is excellent. The results of on-going ground water quality monitoring efforts indicate that there is no measurable trend toward degradation. The District maintains a cooperative agreement with the United States Geological Survey for sampling and analysis of the water quality of the major streams providing recharge to the Aquifer. Ground water quality is monitored by sampling approximately 70 wells throughout the area. These samples from wells and streams are analyzed for more than 50 properties or constituents, which may affect the suitability of the water for its various uses.

Two special studies are currently included in the cooperative agreement with the United States Geological Survey. The District is investigating the effects of urban runoff on streams in the Recharge Zone. The District is also determining if trace organic chemicals are present in the ground water. To date, no low molecular weight trace organics have been detected.

In addition to this on-going program, the Edwards Underground Water District operates and maintains 17 continuous water-level recorders on wells and 18 periodic water-level stations on a monthly basis. On a monthly basis, the District develops the water-level data into a report that is distributed to over 400 interested and concerned individuals. District staff investigates complaints concerning water quality, well construction and open and unused wells.

From the information collected by the United States Geological Survey, an annual report is developed indicating the ground water quality throughout the District. This report is widely distributed throughout the District and the State.

5. Education

The District's education program in the early years began as a means of informing the public about the District and what its functions were. The District's Board began this task in 1960 when the District was organized. Thousands of brochures and reports have been prepared and distributed, not only to the residents of the District but statewide as well. Materials were filed with public and local college libraries within the District. A film about the District was developed as a means of informing the public about the Edwards Aquifer, its recharge, and the need for protection and conservation of its water.

Water conservation programs to educate both city residents and irrigation farmers have been developed by the District. District has spent approximately $12,000 on equipment to determine the efficiency of irrigation systems. This equipment is loaned to the local Soil and Water Conservation Districts for making the evaluations.

A water conservation brochure was developed and distributed throughout the cities and towns in the District.

The District recently undertook its most comprehensive educational effort to date. In cooperation with faculty members from Southwest Texas State

University, a textbook entitled "Water, Water Conservation and the Edwards Aquifer" was developed for use in junior high school science classes throughout the District. The book is also widely used by college students and members of the general public who are interested in the Edwards Aquifer.

Over 18,000 copies of the textbook have been distributed to all of the junior high schools in the Edwards District as well as the elementary school libraries and local and state college libraries.

6. Other District Actions

The District has continually identified and responded to specific issues and concerns in the twenty years it has been in existence. The District has provided almost $500,000 for Soil Conservation Service P.L. 566 flood control planning and projects throughout the District.

These contributions by the Edwards District brought about the construction of small dams which benefitted the District through increased recharge to the Edwards Aquifer.

The District has constructed three recharge facilities and is in the process of building a fourth. All of these recharge projects have been projects of the District alone and have cost almost $2 million dollars.

In addition, the City of San Antonio requested that the District be utilized throughout the Edwards Region and adjacent affected area, to establish a regional water authority and to carry out the recommendations of the Bureau of Reclamation Study. A list of specific resolutions indicating the District's involvement in various activities is attached as Attachment B.

II. OBSTACLES OR CONSTRAINTS ENCOUNTERED BY DISTRICT

In Texas, ground water belongs to the owner of the land above it and may be used for his beneficial purpose. Texas Courts have consistently ruled that a landowner has the right to pump all the water he can from beneath his land, regardless of the effects on other wells, so long as he does not waste the water. It is in this context that the Edwards Underground Water District was created without rulemaking powers. The District does not consider Texas law regarding ground water as an obstacle or constraint, but rather has sought mechanisms to work within the framework of Texas law. The District's efforts have succeeded.

Water from the Edwards Aquifer is used for agricultural, municipal, industrial, and for recreational-streamflow purposes. These varied uses, while they are not incompatible, sometimes result in conflicts which are constraints to problem solving.

The District and other local governmental units have made progress during recent years in resolving these conflicts. Citizens with varying interests in use of ground water have seen that cooperation, instead of forced regulation, results in a better solution to their shared water problems. As we have pointed out, the majority of the District's projects have been conducted cooperatively with other governmental units.

There has been a tendency in our nation to call for the passage of a new federal statute or for a change of existing federal statutes to attempt to solve an identified environmental or natural resource problem. Such a legislative approach can cause unintended problems in the future application of the laws. The Endangered Species Act is an example of federal legislation that serves one important purpose (to protect certain species) yet has brought about unintended restrictions on many members of the public whose use of natural resources poses little if any real threat to the protected species. The District believes that most natural resource issues can best be solved within the framework of state or local laws.

III. DESIRABILITY OF FEDERAL TECHNICAL AND FINANCIAL ASSISTANCE

Different ground water systems have characteristics that result in differing management and protection requirements. An aquifer with a very low recharge rate in an undeveloped area may not require the same level of water quality protection as an aquifer that is rapidly recharged from an urbanized drainage area. If residents of an area have a ground water contamination problem or see the need to provide additional protection of the ground water resource, local governmental units and the State can best provide that protection. These entities are more familiar with the physical system and the wishes of the local community.

If there is to be a federal role, it should only be that of providing technical assistance to the local and state governments upon request. Two excellent examples of cooperation of local, state and federal agencies are the United States Geological Survey cooperative investigations and the programs of the Soil Conservation Service of the United States Department of Agriculture. The Edwards Underground Water District shares the cost of data collection and research efforts of the United States Geological Survey for projects in the Edwards Aquifer area. These cooperative efforts have been the source of most of the information about the Edwards Aquifer. In a similar manner the District works with other local sponsors in flood control and recharge projects of the Soil Conservation Service. In addition, the District is currently working with the Soil Conservation Service in an effort to evaluate and improve irrigation efficiency.

The continuation of existing cooperative programs and increased efforts to share technology are beneficial for ground water protection programs but not necessarily essential.

IV. POSITION ON EXISTING AND PROPOSED FEDERAL LAWS

It is recognized that there are parts of the United States in which ground water has been and is being contaminated. The Edwards Underground Water District and the people of this District, however, have been working successfully to protect water quality for twenty years. Through these efforts the water quality in the Edwards Aquifer has not been degraded. The current federal laws when fully implemented are adequate for protection of ground water to the extent that there is a federal interest in ground water protection.

It is the opinion of the District's directors and management that there is no significant need to enact federal laws for the specific purpose of developing comprehensive management plans for the protection of critical ground water recharge areas. Such protection is the responsibility of local and state governments. If a problem exists that requires resources beyond the capability of local and state governments, then there are existing federal resources available such as the United States Geological Survey cooperative programs and specific authorizations from Congress for necessary studies.

It is not necessary to create another federal program that will result in increased spending for an area of local responsibility. Even though the proposed Sole Source Aquifer Protection Act, S. 2131, may not mandate participation, its provisions will in all probability result in the expenditure of funds in cases where there is no real need.

Another objection is that the proposed legislation would dictate the elements of a management plan. Each aquifer has unique characteristics; therefore, management plans must be different. This aspect of federal programs, that they be uniform, has created unnecessary burdens on local and state governments.

The federal role should be limited to making resources available for data collection and research for those local and state governments indicating a need for such resources. The development and implementation of management plans should be left to those most affected: local and state governments.

ATTACHMENT A

COPY OF THE
DISTRICT'S ENABLING STATUTE

ACT

OF THE

56TH LEGISLATURE
REGULAR SESSION, 1959
CREATING THE
EDWARDS UNDERGROUND WATER DISTRICT
(ARTICLE 8280-219)

AS AMENDED BY THE

66TH LEGISLATURE, 1979

Art. 8280—219. Edwards Underground Water District

Section 1. Creation, Purpose and Area of District. There is hereby created within the State of Texas a conservation and reclamation district to be known as the "Edwards Underground Water District" hereinafter called the "District," for the purpose of conserving, protecting and recharging the underground water-bearing formations within the District, and for the prevention of waste and pollution of such underground water, particularly the waters in the formations known as the Edwards Limestone and Associated Formations in the Counties of Bexar, Comal, Hays, Medina and Uvalde in the State of Texas. The District shall consist of (a) all of the area of Bexar County, except that portion of said County included in Subdivisions Nos. 1 and 2 of the Underground Water Reservoir in the Carrizo-Wilcox sands as defined by order of the Board of Water Engineers dated August 21, 1957; (b) all of the area of Comal County, except that portion of said County lying North of the North line through said County of Subdivision No. 1 of the Underground Water Reservoir in the Edwards Limestone, Balcones escarpment area, as defined by the order of the Board of Water Engineers dated January 10, 1957; (c) all of the area in Hays County included in the area designated as Subdivision No. 1 of the Underground Water Reservoir in the Edwards Limestone, Balcones escarpment area, as defined by order of the Board of Water Engineers dated January 10, 1957, and in addition thereto all of the area of said County within the corporate limits of the City of San Marcos; (d) all of the area of Medina County, except the area of said County lying North of the North line through said County of Subdivision No. 1 of the Underground Water Reservoir in the Edwards Limestone, Balcones escarpment area, as defined in the order of the Board of Water Engineers dated January 10, 1957, and also excluding the area in said County included within Subdivisions Nos. 1 and 2 of the Underground Water Reservoir in the Carrizo-Wilcox sands, as defined by the order of the Board of Water Engineers dated August 21, 1957; and (e) all of the area of Uvalde County.

Sec. 2. District Governmental Agency. The District is hereby constituted and declared to be a governmental agency and a body politic and corporate vested with the full authority of the State of Texas to exercise the powers and to perform the functions hereinafter specified. The District is created in pursuance of Section 59 of Article 16 of the Constitution of the State of Texas and the creation of the District is hereby found and determined to be essential to the accomplishment of the purposes of said provisions of the Constitution.

Sec. 3. Powers of the District. The District shall have and is hereby authorized to exercise the following powers, rights and privileges and functions:

(1) to conserve, preserve, protect and increase the recharge of and prevent the waste and pollution of the underground water;

(2) to acquire lands and easements by purchase or by exercise of the power of eminent domain for the erection of dams and for the purpose of drilling and equipping in-put wells, and to drill, equip and operate in-put wells, construct dams, and to install pumps and other equipment necessary to recharge the underground water-bearing formations; to acquire by contract or purchase, waters and water rights deemed necessary or appropriate by the Directors of the District for conserving and recharging underground water-bearing formations; and to appropriate water for such recharge under the provisions of Art. 7470, Revised Civil Statutes, as amended; provided, however, the power of eminent domain as herein provided for, shall be limited to the Counties of Bexar, Comal, Hays, Medina, Uvalde;

(3) to cause surveys to be made of the underground water reservoirs or subdivisions thereof and of underground water-bearing formations; to cause investigations to be made to determine the movement of underground water and the quantity thereof available for production and use and the improvements and developments needed in recharging

underground water reservoirs or Subdivisions thereof and underground water-bearing strata;

(4) to develop comprehensive plans for the most efficient use of underground water and for the prevention of waste and pollution of underground water; to collect and preserve information regarding the prevention of waste and pollution of underground water and to publish such plans and information, and otherwise bring them to the notice and attention of the users of underground water within the District;

(5) to institute and defend suits and proceedings before any court or any administrative body or agency, State or Federal, in carrying out the purposes, powers and functions of the District;

(6) to enter into contracts with and to participate in joint efforts and projects with water districts, conservation districts, cities and towns, counties and municipal and governmental agencies of every kind, both State and Federal, and with individuals and private corporations, for the purpose of conserving, protecting, recharging, or benefiting underground water-bearing formations within the District and waters therein, and the Board of Directors of the District shall be empowered to use, dedicate and pledge taxes and revenues of the District and to use the proceeds from District bonds for said purposes whether the District or some other municipal or governmental agency or department is in charge of such work or development. SEE P. 481A for amendment to Sec. 3.

Sec. 4. In the event the District, in the exercise of the power of eminent domain or power of relocation, or any other power granted hereunder, makes necessary the relocation, raising, re-routing or changing the grade of, or altering the construction of any highway, railroad, electric transmission line, telephone or telegraph properties and facilities, or pipeline, all such necessary relocation, raising, re-routing, changing of grade or alteration of construction shall be accomplished at the sole expense of the District.

Sec. 5. Board of Directors of District. The government and control of the District shall be vested in a Board of Directors consisting of fifteen (15) Directors, three (3) of which Directors shall be elected by the majority vote of the qualified voters residing in the area of each of the five (5) counties included within the boundaries of the District. The area of the District lying in each of the five (5) Counties of Bexar, Comal, Hays, Medina and Uvalde is hereinafter referred to as a "county area." The three (3) Directors elected to serve as the first Directors from each county area included within the District shall at the first meeting of the Board of Directors determine by lot which shall serve for a term of two (2) years and which shall serve for a term of four (4) and six (6) years respectively, and the terms so determined shall be and constitute the first term of office of each of said Directors. Thereafter there shall be elected at large in each county area one director each two (2) years to serve for a term of six (6) years. All Directors shall hold office until their successors have been elected and have qualified by

(7) to require that copies of water well drillers' logs required to be kept and furnished to the Texas Department of Water Resources or its successor by The Water Well Drillers Act, as amended (Article 7621e, Vernon's Texas Civil Statutes), be furnished to the District. The well log required herein shall at the request in writing to the District, by certified mail, by the owner or the person having such well drilled, be held as confidential matter and not made of public record;

(8) to report to the Texas Department of Water Resources violations of the Water Well Drillers Act, as amended (article 7621e, Vernon's Texas Civil Statutes), and rules and regulations of the department pertaining to the Act;

(9) to require the owner or lessee of land on which an open or uncovered well is located to keep the well permanently closed or capped with a covering capable of withstanding weight or pressure of at least 400 pounds per square inch, except when the well is in actual use. As used in this subsection, "open or uncovered well" means and artificial excavation of at least 10 feet deep that is dug or drilled for the purpose of producing water from the underground water reservoir and is not capped or covered as required by this subsection. If the owner or lessee fails or refuses to close or cap the well in compliance with this subsection within 30 days after being directed to do so in writing by certified mail by an officer, agent, or employee of the District, any person, firm, or corporation employed by the District may go on the land and close, plug, or cap the well. Expenses incurred by the District in closing, plugging, or capping a well, not to exceed $100, shall constitute a lien on the land on which the well is located. The lien is perfected by filing in the County Court of the county where the well is located a sworn petition executed by the Chairman of the Board of Directors of the District, stating the following:

(A) the existence of the well;
(B) the legal description of the property on which the well is located;
(C) the approximate location of the well on the property
(D) the failure or refusal of the owner or lessee, after notification, to close, plug, or cap the well as required by this section within 30 days after notification;
(E) the closing, plugging, or capping of the well by the District or its authorized agent, representative, or employee; and
(F) the expense incurred by the District in closing, plugging, or capping the well.

If after notice and hearing in the County Court finds the facts required by this section, he shall enter a judgment which shall constitute a lien on the land when recorded in the deed records. The judgment of the County Court is appealable as are other civil cases in which the County Court has original jurisdiction.

taking the oath of office. Before entering upon the duties of his office each member of the Board of Directors shall take the Constitutional oath of office and the same shall be filed in written form with the Secretary of the Board. Vacancies occurring in the Board of Directors from any county area shall be filled by the remaining member or members of the Board from such county area and the person so appointed shall serve for the unexpired term of the person in whose place he is appointed. All members of the Board of Directors shall be property tax-paying voters over the age of twenty-one (21) years, residing within the District and within the county area from which he is elected or appointed.

Sec. 6. Election of Directors. Within sixty (60) days after this Act becomes effective the County Judge of each of the five (5) Counties embracing areas included in the District shall call an election to be held at such polling place or places within the county area in said County as he may deem proper for the election of three (3) Directors from such area. The election so called shall be held on the first Tuesday following thirty (30) days after publication of notice of said election, and notice of said election in each county area shall be given by publication in a newspaper of general circulation in the County, said notice to be published at least once not less than thirty (30) days prior to the date set for the election. The order of the County Judge providing for said election and for the notice thereof shall name the officers of the election and direct that the same be held in accordance with the General Election laws of the State. All matters relating to such election shall be filed with the County Judge of the County in which each election is held, and the results of the election in each county area shall be canvassed and certified by the County Judge of each County. The order calling the election and all actions pertaining to the election shall be entered in the minutes of the Commissioners Court. In the first election conducted by the County Judge of each County, candidates' names shall be placed upon the ballot upon application made not less than twenty-five (25) days before the election accompanied by an endorsement in writing signed by not less than twenty (20) qualified voters of the county area in which they are candidates. In elections after the first election the placing of names of candidates upon the ballots shall be governed by rules adopted by resolution of the Board of Directors or set forth in the By-Laws of the District. After the election of said first Board of Directors all elections within the District shall be carried out in accordance with appropriate resolutions and actions of the Board of Directors of the District and the result of all elections shall be canvassed by the Board of Directors of the District at a meeting following each biennial election. All elections after the first election shall be held on a date in the month of November and at the polling places designated by the Board of Directors of the District. The term of office of Directors elected at each election after the first election shall commence on the first day of January following their election. In all elections, including the first election, the person or persons receiving the greatest number of votes, that is a plurality, shall be declared elected. Should there be a tie in the votes received the winner of the election shall be determined by lot in a manner approved by the majority of the Board of Directors of the District.

Sec. 7. Compensation of Directors. Directors of the District shall be entitled to Fifty Dollars ($50) per day for each day of official service, whether sitting as a Board or serving on a committee of the Board, and in addition thereto shall be entitled to reimbursement for all actual expenses necessarily incurred by reason of such service. No Director shall receive a total amount of more than Nine Hundred Dollars ($900) in any twelve (12) months period for service as a Director and as a member of a committee; provided, however, no Director shall be disqualified to render service to the District as an employee or representative and to receive reasonable compensation therefor, provided such Director shall be disqualified from voting on any resolution providing for such employment or fixing the compensation therefor. All fees for services as a Director or as a member of a committee of Directors and all necessary expenses in connection with such service shall be paid out of funds raised in the county area from which the Director is elected or appointed.

Sec. 8. Officers and Proceedings. The Board of Directors shall manage and control all of the affairs and business of the District, including the employment and supervision of all persons and the making of all purchases and contracts deemed necessary or proper in the carrying out of the purposes of the District. The Board of Directors shall have power to adopt such By-Laws and methods of procedure for the District and the Board as it may deem proper. At the first meeting of the Board after the organization of the District and after each biennial election of Directors there shall be appointed by majority vote of the Board of Directors from its membership a Chairman, a Vice-Chairman, a Secretary and a Treasurer, and, if deemed proper, an Assistant Secretary and an Assistant Treasurer, who need not be members of the Board of Directors and who may be granted limited powers. The officers so appointed shall serve for a term of two (2) years and until their successors have been appointed, except that the Assistant Secretary and the Assistant Treasurer, if such officers are appointed, shall hold office at the pleasure of the Board of Directors. Regular and special meetings of the Board of Directors shall be held at such time as may be designated by By-Laws or by resolution of the Board of Directors and notice thereof shall be given as such By-Laws or resolution may provide. The Board of Directors may adopt a corporate seal for use by the District.

Sec. 9. County Chairman—Executive Committee. The three (3) Directors elected or appointed from each county area within the District shall appoint one of their number County Chairman and the five (5)

County Chairmen so appointed shall constitute the Executive Committee of the District, which Executive Committee, acting by a majority vote at any meeting at which a quorum is present, shall be authorized to take all action relating to routine affairs of the District which they may consider necessary between regular meetings of the Board of Directors, and the Board of Directors may confer upon the Executive Committee all such powers and authority with regard to affairs of and the exercise of the powers of the District as the Board of Directors may from time to time deem proper.

Sec. 10. Levy and Collection of Taxes. The District, acting by a two-thirds (⅔) majority of the vote of the Board of Directors each year, is hereby authorized to levy an annual tax in each calendar year upon all property subject to District taxation of two cents (2¢) on each One Hundred Dollars ($100) of assessed valuation based upon the valuation of taxable property for county tax purposes in each of the county areas within the District; that is, the District shall adopt for each county or all of that part of a County in the District, the County tax roll and tax valuations for the current year for the lands and other taxable property located within each county area. The District shall enter into a contract with reference to the collection of such taxes within each county area with the Tax Collector or the Tax Assessor and Collector of such County in the manner provided by the Revised Civil Statutes relating to the collection of Water Control and Improvement District taxes. Should the District, with respect to any county area, find that such a contract cannot or should not be made, then the District may, for such county area, appoint an Assessor and Collector of Taxes and fix his compensation and powers.

Sec. 11. Voting of Additional Tax. Upon the approval of the majority of the three (3) Directors from any county area, and upon the vote of the majority of the Board of Directors of the District, an election may be held within such county area for the purpose of voting upon and authorizing the levy of taxes in addition to the two cents (2¢) per One Hundred Dollars ($100) as hereinabove provided, but not to exceed an additional annual tax of twenty-three cents (23¢) on the One Hundred Dollars ($100) of the County valuations of property subject to District taxation within a county area included in the District. Said additional taxes may be voted and thereafter collected in one or more county areas, whether or not other county areas in the District vote additional taxes. Said election shall be held in accordance with the State election laws applicable to the voting of taxes for the support of County bonds and such laws applicable to the voting of taxes for the support of County bonds and such additional taxes shall be levied only if authorized by a majority vote of the resident, qualified property tax-paying voters of the District who own taxable property therein which has been duly rendered for taxation voting at said election. In the event of the voting of such tax the same shall go into effect and be collected for the year commencing on the January 1st following the election and shall be levied, assessed and collected in the manner specified in Section 10 hereof.

Sec. 12. Depositories—Handling of Funds. All funds collected through the levy of a tax on property located in each county area of the District shall be kept in a separate fund in a depository within such County and such funds shall be subject to disbursement only in a manner and for purposes approved by a majority of the Directors elected from such county area and by the majority vote of the Board of Directors of the District as a whole; to the end that the disbursement and use of all funds collected by taxation within each county area shall be subject to the control of the three (3) Directors from such County. Each Director who is authorized to withdraw funds, either on his sole signature or with the joinder of others, shall give an official bond in the amount of Five Thousand Dollars ($5,000) in the form required to be given by Directors of Water Control and Improvement Districts. Any funds of the District not arising from the collection of taxes on property within a county area shall be deposited in an appropriate central fund of the District in a depository selected by a majority vote of the Board of Directors of the District and shall be used and disbursed for purposes and in the manner directed by a majority vote of the Board of Directors of the District. With the approval by a majority vote of the three (3) Directors from any county area, funds raised by taxation within such county area may be transferred to an appropriate central fund of the District and used and disbursed by action of the Board of Directors as a whole as above provided.

Sec. 13. Issuance of Bonds. The District shall have the power and authority, acting by a majority vote of the Board of Directors, to issue bonds for carrying out any work or improvements coming within the powers and purposes of the District payable out of taxes of the District which have been duly authorized as provided in this Act, provided the issuance of such bonds has been approved by a majority vote of the property tax-paying voters of a county area included within the District; provided that there shall be pledged for the payment of said bonds only taxes levied and appropriated for said purposes in the county area or areas so voting in favor of the issuance of said bonds and the levy of taxes for the payment of the principal and interest thereon. Such election shall be held in accordance with the State election laws applicable to Water Control and Improvement Districts, and said bonds shall be in a form and issued in accordance with procedures applicable to bonds of Water Control and Improvement Districts organized under the general laws. In addition to tax funds, such bonds may be supported by any other funds available or to be available to the District.

Sec. 14. Location of General Office. The general office and legal domicile of the District shall be in the City of San Antonio, Bexar County, Texas, or at such other place as may be designated by resolution duly adopted by a vote of two-thirds (⅔) of all of the Directors of the District; and the Board of Directors may maintain additional offices at such places in the District as it may deem proper. In the event of a change in the location of the general office and domicile of the District notice thereof shall be immediately given by publication at least once in a newspaper or newspapers of general circulation in each of the county areas.

Sec. 15. Temporary Funds. Any person or corporation may advance funds to defray the necessary expenses of calling and holding the first election of Directors of the District in each County area and for the purchase of a minute book, seal and other supplies in connection with the initial proceedings of the Board of Directors and the Board of Directors shall have authority to repay all sums so advanced from any of the funds of the District.

Sec. 16. The ownership and rights of the owner of the land, his lessees and assigns, in underground water are hereby recognized, and nothing in this Act shall be construed as depriving or divesting such owner, his assigns or lessees, of such ownership or rights. This Act shall not be construed to be a grant of any rights of superior existing permits or water rights.

Sec. 17. Construction. If any provision of this Act, shall, for any reason, be held invalid, such holding shall not affect the remaining portion of this Act, and this Act shall be given a liberal and broad construction in order that the expressed objectives of the Act may be carried out. Acts 1959, 56th Leg., p. 173, ch. 99.

ATTACHMENT B

LIST OF RESOLUTIONS

RESOLUTION OF THE BOARD OF DIRECTORS, EDWARDS UNDERGROUND WATER DISTRICT FOR CITY OF SAN ANTONIO TASK FORCE

RESOLUTION OF THE BOARD OF DIRECTORS, EDWARDS UNDERGROUND WATER DISTRICT REGARDING OIL AND GAS EXPLORATION IN THE AREA OF THE DISTRICT

RESOLUTION OF THE BOARD OF DIRECTORS OF EDWARDS UNDERGROUND WATER DISTRICT OPPOSING THE PROPOSED "SOLE SOURCE AQUIFER PROTECTION ACT OF 1982", HOUSE OF REPRESENTATIVES BILL 5562 AND SENATE BILL 2131, UNITED STATES CONGRESS

RESOLUTION
# of the
BOARD OF DIRECTORS
EDWARDS UNDERGROUND WATER DISTRICT
for
CITY OF SAN ANTONIO WATER TASK FORCE

WHEREAS, the Edwards Underground Water District is charged by law with developing plans for making the best use of the water from the Edwards Aquifer and for publishing and making public such plans; and,

WHEREAS, the Edwards Underground Water District will hold a series of public meetings throughout the region covered by the District and adjacent areas which may be affected, to explain the provisions of the in-depth study made by the Bureau of Reclamation for the City of San Antonio, the San Antonio City Water Board, San Antonio River Authority, Guadalupe-Blanco River Authority, and the Edwards Underground Water District, with the consent and participation of the Nueces River Authority; and,

WHEREAS, the District has the capability of holding regional forums and can be changed into the necessary type of regional water authority with only slight changes in its present law;

NOW, THEREFORE, BE IT RESOLVED that the Edwards Underground Water District be utilized throughout the Edwards Aquifer Region and adjacent affected areas, to establish a regional water authority and to carry out the recommendations of the Bureau of Reclamation Study as desired by political sub-divisions of the region.

Passed and approved by unanimous vote of the Board of Directors of the Edwards Underground Water District on November 14, 1978.

Wm. H. Spice, Jr., Chairman
Board of Directors
Edwards Underground Water District

ATTEST:

Jo Celia Cullinane
Asst. Secretary-Treasurer

RESOLUTION OF THE BOARD OF DIRECTORS
EDWARDS UNDERGROUND WATER DISTRICT
REGARDING OIL AND GAS EXPLORATION
in the
AREA OF THE DISTRICT

WHEREAS, the Edwards Aquifer is an underground water reservoir in the Edwards and Associated Limestones as defined by the Board of Water Engineers, January 10, 1957. The Edwards Aquifer extends from Brackettville in Kinney County, through Uvalde, Medina, Bexar, Comal counties to Kyle in Hays County; and,

WHEREAS, the Edwards Underground Water District was created by the State Legislature in 1959 for "the purpose of conserving, protecting and recharging the underground water-bearing formations within the District, and for the prevention of waste and pollution of such underground water"; and,

WHEREAS, the Edwards Aquifer is the source of water for drinking and municipal, industrial, agricultural and recreational uses for one million residents of the area; and,

WHEREAS, the Texas Department of Water Resources has issued rules for protection of ground water quality, thereby recognizing that the aquifer is susceptible to contamination; and,

WHEREAS, all residents of the District are equally concerned with the preservation of water quality of the Edwards Aquifer as evidenced by their actions to create the Edwards Underground Water District and to abide by special rules issued by the Texas Department of Water Resources for protection of the aquifer; and,

WHEREAS, the Board of Directors of the Edwards Underground Water District is concerned about protecting the Edwards Aquifer water quality and is aware of the potential for contamination as a result of oil and gas exploration through the Edwards and Associated Limestone formations if proper precautions are not taken; and, WHEREAS, the District has taken steps to be informed of the oil and gas activity in the area of the District; and,

WHEREAS, the District recognizes the property rights of the individual landowner and their right to explore for and produce the minerals of their land in accordance with the laws of the State of Texas; and,

WHEREAS, the Texas Railroad Commission is the agency of the State that is responsible for enforcement of the laws of the State regarding oil and gas exploration and production;

THEREFORE, BE IT RESOLVED, that the Texas Railroad Commission require surface casing or a superior approved method of protecting ground water quality, and that no exceptions be granted for oil and gas wells penetrating the Edwards Aquifer in the freshwater zone, and,

BE IT FURTHER RESOLVED, that the Edwards Underground Water District advise and assist the Texas Railroad Commission in any appropriate manner to insure the protection of the quality of the water in the Edwards Aquifer.

PASSED AND APPROVED by unanimous vote of Directors present at a regular meeting of the Board of Directors on May 12, 1981.

Charles W. Roth
Charles W. Rothe
Secretary
Edwards Underground
Water District

Bruce T. Foster
Bruce T. Foster
Chairman of the Board
Edwards Underground
Water District

RESOLUTION OF THE BOARD OF DIRECTORS OF EDWARDS UNDERGROUND WATER DISTRICT OPPOSING THE PROPOSED "SOLE SOURCE AQUIFER PROTECTION ACT OF 1982," HOUSE OF REPRESENTATIVES BILL 5562 AND SENATE BILL 2131, UNITED STATES CONGRESS

WHEREAS, the Edwards Underground Water District is a political subdivision of the State of Texas created by the Texas Legislature in 1959 for the purpose of conserving, preserving, protecting and recharging the water in the Edwards Aquifer and associated limestone formations within the boundaries of the District; and

WHEREAS, the Edwards Underground Water District has conducted studies and monitored the water quality of the Edwards Aquifer since the creation of the District; and

WHEREAS, the Edwards Underground Water District, in cooperation with numerous federal, state, regional and local agencies maintains a continuing program of water quality monitoring; and

WHEREAS, the State of Texas through the Texas Department of Water Resources has adopted rules for the protection of the Edwards Aquifer; and

WHEREAS, the United States Environmental Protection Agency has designated the Edwards Aquifer as a "sole source" aquifer in accordance with the provisions of Section 1424 (e) of the "Safe Drinking Water Act of 1974"; and

WHEREAS, there has been introduced into both Houses of the United States Congress in 1982 legislation entitled the "Sole Source Aquifer Protection Act of 1982," the provisions of which would allow residents of designated sole source aquifer areas, including the Edwards Aquifer area, to petition the governor of the state to request financial assistance from the United States Environmental Protection Agency to prepare a comprehensive management protection plan for the recharge area of such sole source aquifer, and such a plan may include land use management requirements and the designation of specific areas appropriate for public acquisition; and

WHEREAS, the District recognizes that public acquisition of the Edwards Aquifer Recharge Zone would be prohibitively expensive because of the extensive size of the recharge zone, being over 1500 square miles in area; and

WHEREAS, the District acknowledges and supports the policy of the President of the United States and the present Administration to reduce federal expenditures and to return more responsibility for local matters to the state and local governments; and

WHEREAS, the proposed "Sole Source Aquifer Protection Act of 1982" would encourage and allow federal involvement and expenditures for protection of the Edwards Aquifer, which protection is a local and state responsibility;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Edwards Underground Water District opposes the passage of the proposed "Sole Source Aquifer Protection Act of 1982" as currently drafted; and in any form with similar intent; and that the management of the District is authorized and directed to take necessary and appropriate action to convey the position of the Board of Directors on such proposed legislation to appropriate elected officials and to other interested persons.

PASSED AND APPROVED by unanimous vote of the Directors present at a regular meeting of the Board of Directors on May 11, 1982.

Bruce T. Foster

Bruce T. Foster, Chairman
Board of Directors
Edwards Underground Water District

Charles W. Rothe

Charles W. Rothe, Secretary
Board of Directors
Edwards Underground Water
District

ATTEST:

Jo Celia Cullinane

Jo Celia Cullinane
Assistant Secretary-Treasurer
of the Board of Directors
Edwards Underground Water
District

TESTIMONY OF

THOMAS A. BURKE

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Mr. Chairman, Members of the Committee, I appreciate the opportunity to speak with you today. I am Thomas Burke, Director of the Office of Cancer and Toxic Substances Research of the New Jersey Department of Environmental Protection. My office is the research arm of the toxic substances control efforts in the State of New Jersey. My testimony today will be divided into two parts. First, I would like to present an overview of four years of research on toxic contaminants in New Jersey's water. I would then like to address a number of issues raised by proposed amendments to the Safe Drinking Water Act.

Overview of Research

In 1975, the National Cancer Institute released statistics revealing that for the period 1950-1969 New Jersey led the nation in overall cancer mortality. This prompted an aggressive multi-disciplinary program to evaluate the State's cancer problem, which included extensive research and monitoring of citizen exposure to toxic and carcinogenic pollutants in the environment. The goals of this research are: increased knowledge of the extent and sources of toxic pollutants, improved regulatory and enforcement efforts to reduce exposure and a better understanding of the effects of these pollutants on human health.

A major part of this research has been the extensive monitoring of the State's water. This includes statewide testing of our ground, surface and drinking waters for a wide range of toxic pollutants. I would like to give a brief overview of our results. In presenting these results I would like to stress that they are not unique to New Jersey, but are indicative of a national problem. They clearly indicate the sensitivity of our water resources, and the need for a strong national policy to safeguard human health.

Groundwater

Fifty percent of the nation and sixty percent of New Jersey receives its drinking water from underground sources. Historically, groundwater was assumed to be purer and safer than drinking water from surface supplies. Recently, however, the sensitivity of groundwater to irreversible contamination by industrial chemicals has been demonstrated nationwide. In New Jersey we have tested over 1000 wells statewide for organic compounds, pesticides and heavy metals. These tests revealed the presence of low levels of these contaminants in virtually all areas of the State. Seventeen percent (17%) of the initial 670 wells tested contained one or more of eight volatile organic compounds at concentrations above ten parts per billion (10ppb).

Five of these compounds are suspected carcinogens. 3.1% of the wells in the study contained these compounds at concentrations exceeding one hundred parts per billion. A number of instances of pesticide and heavy metal contamination were also discovered. It appears, however, that the greatest threats to groundwater are the halogenated volatile organic compounds. This is due to the combination of their widespread use, relative ease of movement, resistence to breakdown and potential cancer causing effects. The results of our research are presented in the report "Toxics in Groundwater" by Dr. Robert K. Tucker, which I have attached to my testimony.

Surface Water

We have also conducted statewide monitoring of surface water. While the dynamics of surface water systems provide some natural cleansing action, it is clear that these systems are sensitive to the threat of toxic chemical contamination. Our State shares with New York the tragic consequences to our commercial and recreational fisheries and the threat to human health resulting from the PCB contamination of the Hudson-Raritan Estuarine System. On the other side of the State, in the Camden area, we have uncovered severe problems of pollution by the pesticide chlordane again with subsequent bioconcentration in fish used for human consumption.

Monitoring of resevoirs in southern and northern areas of the State clearly demonstrated the sensitivity of our watersheds to the threat of toxic chemicals.

Drinking Water

We have conducted extensive monitoring of our public drinking water supplies, both surface and ground, for the EPA list of 129 priority pollutants. In addition, as part of a national study of the relationship between drinking water quality and bladder cancer being conducted by the National Cancer Institute, we have tested every purveyor serving over 1000 people for a list of ten volatile organics.

The results of these tests are sobering. The majority of the finished drinking waters contained low levels of potential cancer causing volatile organics. While many groundwater supplies contained traces of industrial solvents, the greatest threats to surface supplies are the volatile organic trihalomethanes which are formed by the combination of chlorine with naturally occurring organic material during the chlorination process. Several large public supplies were found to have levels of trihalomethanes exceeding 100 parts per billion, the current EPA standard.

Implications of Research and the New Jersey Response

The results of our investigations clearly indicate the sensitivity of our water resources to the threat of chemical contamination. Evidence of toxic contaminants was found in urban industrialized areas as well as the most rural parts of the State. Potential sources range from abandoned hazardous waste sites to individual homeowners' septic systems.

Our responses to specific incidences of contamination have been as varied as the potential causes. In some instances we have closed individual domestic wells, requiring homeowners to hook up with municipal suppliers. Other times we have initiated major enforcement or clean-up activities to remove potential contaminants. In many cases we have worked with local authorities to determine the most appropriate courses of action which often include long term monitoring, improved treatment or development of a new source. All of these responses are extremely costly and have been hampered by the lack of federal standards for toxic contaminants.

By far, our most effective long term response to groundwater contamination is prevention. Through the New Jersey Solid Waste Management Act and Federal Resource Conservation and Recovery Act, we have initiated aggressive programs to control the improper discharge and disposal of hazardous chemicals. We have developed a program to identify and clean up abandoned hazardous waste dumpsites which is supported by the New Jersey Spill Compensation and Control Act, the 1981 Hazardous Discharge Bond Act and the Federal Comprehensive Environmental Response, Compensation, and Liability Act. In addition, through the development of a State Water Supply Master Plan we have identified sensitive recharge areas and watersheds to facilitate the protection of critical areas.

This threat of chemical contamination of drinking water is not unique to New Jersey, but a growing national concern which must be addressed with the preventive approach of a strong Safe Drinking Water Act. To insure the safety of the nations drinking water we must aggressively pursue research on the human health effects of toxic contaminants; we must move to protect our sensitive watersheds and recharge areas; and we must continue to develop and assess treatment technologies to efficiently and effectively remove toxic chemicals from our water. Most importantly, enforceable standards must be developed to provide guidance to consumers, purveyors and regulators and prevent any adverse effects to the health of our citizens.

I would now like to address four specific issues raised by the proposed amendments S.1866 and S.2131

Unreasonable Risk

Section 3 of S.1866 would change the contaminants to be regulated from those which "may have any adverse effect on the health of persons" to those which "pose an unreasonable risk to the health of persons." This change is not consistent with the preventive approach of the Act and would severely weaken its protective powers. It represents a fundamental shift from preventive to reactive. The burden of defining "unreasonable risk" would cause great delay in the setting of standards leading to continued exposure of our citizens. If such wording is to be included in the Act, I recommend that the sponsors include an estimate of the number of deaths or other adverse health effects which constitute a "reasonable" risk.

New Jersey has taken the prudent approach of minimizing or eliminating citizen exposure in the absence of documented health effects data. We believe in this conservative approach and therefore urge that the original preventive language of the Act be preserved.

Treatment Technology

The establishment of safe standards for chemical contaminants is a complex and difficult task which is complicated by the many thousands of potential pollutants and their potential synergistic effects. Currently, the Safe Drinking Water Act authorizes the Administrator to prescribe a particular treatment technology in cases where setting a maximum permissible contaminant level is prohibitively expensive or technologically impossible. S.1866 would eliminate this authority, in effect reducing the Agency's ability to address a threat to public health. In specific instances, the use of broad spectrum treatment may prove an efficient and economic alternative to addressing individual pollutants. Concern has been voiced that the opportunity for "over-regulation" is too available and that the existing regulations may not always result in cost effective solutions to specific contamination problems. We feel, however, that a cooperative and open dialogue between EPA, the water purveyors, and the affected customers, will enable the regulatory process to operate in an equitable and effective manner. With proper supportive regulations to insure that proposed treatments are practical and implementable, we feel that this authority should be preserved.

The current groundwater contamination situation in Atlantic City provides a good example of the benefits of broad spectrum treatment. Presently, the Atlantic City well field is potentially threatened by a soup of toxic chemicals from an abandoned hazardous waste site. Rather than attempting to monitor and control individual chemicals, granular activated charcoal treatment was chosen. Should the monitoring wells indicate an impact from the dumpsite this treatment will be employed to remove a broad range of contaminants and protect consumers from potential harmful effects.

Undoubtedly there are countless other instances nationwide where broad spectrum treatment technologies could be efficiently employed. We therefore believe that this tool should continue to be available to the Administrator.

Variances for Small Suppliers

In New Jersey many of the problems concerning the quality of public water supplies are commonly associated with small water treatment systems. The granting of variances or waivers from standards on the basis of economic hardship would tend to prolong an acute existing problem. Public health risks to individual consumers remain the same regardless of the size of the supplier Many of New Jersey's smaller water companies rely exclusively on groundwater supply, and because of our problems with aquifer contamination it is these companies that may be most vulnerable to contamination by toxic compounds. As a demonstration of our concern New Jersey has a law that permits the Department of Environmental Protection to order small water companies to combine with larger ones in order to improve quality and operation. Rather than waivers permitting the violation of standards, small companies should be given incentives to upgrade.

Sole Source Aquifers

We commend the efforts of Senator Moynohan and agree with the intent of S.2131 to protect sensitive recharge areas. However, we feel that greater benefits and protection could be derived if the protective efforts are expanded to include all water sources. The concept of "sole source" has caused problems and misunderstanding in New Jersey. In the coastal plain, which constitutes the southern half of our state we have a layered aquifer system. If an upper aquifer is contaminated, it is argued that we can simply sink wells deeper into a lower aquifer. While there is now some advocacy for treating this whole system as a single "sole source", this interpretation may not prevail under the law. Yet all of these aquifers are critical in providing drinking water to New Jersey's citizens. States should be encouraged to develop detailed plans for mapping important aquifers and watersheds and initiating programs to encourage appropriate local zoning for prudent land management in critical areas. Only a small proportion of the nation's drinking water reserves would fit the definition of "sole source." To insure maximum protection of our resources all sources should be afforded equal attention.

Conclusion

I want to thank you for this opportunity to be part of your review of the Safe Drinking Water Act. I feel that the work we have done in New Jersey clearly indicates the need for a strong national effort to protect our drinking water. By preserving the preventive approach of the Act and urging improved implementation by EPA we can ensure the maintenance of safe and pure water throughout the United States.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Testimony of Robert E. Moore, Director, Water Compliance Unit, Connecticut Department of Environmental Protection before the Toxic Substances and Environmental Oversight Subcommittee of the Committee on Environment and Public Works, United States Senate.

Protecting Connecticut's ground waters for future water supplies and recovering or reclaiming those ground waters already lost to contamination is the major and most important water quality challenge and goal of the state. This challenge is being met today by improved and comprehensive management of our water resources, stricter enforcement careful permitting and increased monitoring.

Forty-eight percent (48%) of Connecticut's 3,100,000 people rely on ground water for their water supply. Twenty percent (20%) rely on individual household wells for drinking water though no routine monitoring is conducted to verify potability. The demand for ground water is increasing as requirements for increased treatment of surface supplies are imposed. Seventy-eight of Connecticut's 169 towns have experienced contamination of water supplies within their boundaries in the last five years. By January 1982 over 350 wells had been contaminated from a variety of pollution sources including: home disposal of household chemicals and septic system additives, road salt, fuel and chemical storage, landfill leachate and toxic and hazardous wastes. Sixty-five (65) of the wells were public water supplies the remaining private or commercial supplies. These wells were serving an estimated 200,000 persons. One half of these problems have been resolved (primarily the public supplies) by development of new sources or treatment. Many of the private domestic supplies are relying on bottled water, home filters, or boiling. This problem increases daily as we monitor more and more landfill and industrial sites. In my small town of 5,000 people over 20 wells were found contaminated in the last month by trichloroethelene from two industrial sources.

Control and abatement of these contamination problems has been carried out through Connecticut's Clean Water Act of 1967. Ground and surface waters are defined as waters of the state by the act and unlike the Federal laws, all enforcement and permitting powers are the same. However, until 1980, the inseparable relationship between ground and surface water was not recognized in water quality policy, comprehensive planning, or standards for use of or discharge to the ground waters.

In September of 1980, statewide ground water quality standards and criteria were adopted with the surface water quality standards revisions of that year pursuant to Section 25-54e of the Connecticut General Statutes and Section 303 of the federal Clean Water Act. It was determined that a system of Ground Water Quality Standards paralleling the surface program would be workable and effective. These Standards and subsequent classification are the primary tool of the state to protect and manage its ground waters.

Classification of groundwater could not occur without defining ground water movement or flow systems and determining its boundaries. To define this, certain reasonable assumptions had to be made. The primary assumption was that the ground water follows the same areal pattern as the surface watershed and discharges to the surface water. This assumption is valid for most of Connecticut for the shallow ground water flow system the standards address. This program has not been applied to the deeper bedrock groundwater flow systems. Also this assumption may not be valid in States with differing hydrogeology

Phone:
State Office Building, Hartford, Connecticut 06115
An Equal Opportunity Employer

The next step was to map all wastewaters discharges to the surface and ground waters, all salt piles, lagoons, oil or chemical spills and all landfills. All surface water reservoirs and public water supply wells were also plotted. Following this, certain hydrogeologic features were also mapped. These include the till-stratified drift contact, areas of greater than 40' of saturated stratified drift. Additionally, areas of greater than 10' of unsaturated stratified were identified. This hydrogeologic information gives us insight into those areas that should be given primary consideration for future well water supply development, in contrast to those areas that might logically receive further study for waste disposal to the ground. It should be noted that the hydrogeologic data and other natural resources data would not be available without years of effort from a variety of sources including the U.S. Geological Survey and USDA Soil Conservation Service.

With this data in place, we were able then to evaluate existing conditions and begin developing site specific standards. These ground water standards not only protect water for drinking but also identify where discharges to surface and ground water would be acceptable. Connecticut's statutes (Section 25-54e) require that "these standards shall protect the public health and welfare and promote the economic development of the State and preserve and enhance the quality of the State's waters for present and future use for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, agricultural, industrial and other legitimate uses."

The discharge of wastewater from industry, municipalities, homes, landfills, lagoons, and possibly hazardous waste storage and disposal are legitimate uses and, therefore, must be provided for in both surface and ground waters. We have recognized this critical but controversial conflict between water uses and have identified and mapped areas most suited for these uses as well as those areas best suited for water supply development.

> The Department has adopted the following policy in these standards "It is the policy of the State to restore or maintain the quality of the ground water to a quality consistent with its use for drinking without treatment. In keeping with this policy, all ground water shall be restored to the extent possible to a quality consistent with Class GA. However, restoration of ground water to Class GA shall not be sought when:
>
> A) The ground water is in a zone of influence of a permitted discharge.
> B) The ground water is designated as Class GB; unless there is demonstrated need to restore ground water to a Class GA designation or where it can be demonstrated to the Commissioner that restoration to Class GA can be reasonably achieved.
> C) The ground water is designated Class GC."

The standards define the zone of influence as the soil or water area needed to allow the treatment of effluent by soils or the mixing of effluent with ground or surface waters. They further specify for ground waters that

> 1) "Zones of influence may be allowed and the determination boundaries of a zone shall be required when natural soil materials are used to treat a discharge or to allow the dilution of substances by ground water to acceptable concentrations for discharge to the surface waters in an effluent/ground water mix which will not violate the established water quality classification for the surface water.
> 2) The zone of influence for subsurface sewage disposal systems which are permitted under the authority delegated to the Commissioner of Health Services by Section 25-54i-1.0-5.2 shall be defined as the area required by the separating distances established as minimum requirements of the Public Health Code.

3) The zone of influence for all other discharges to the ground water shall be the area in which the ground water could be in violation of any pertinent federal and State drinking water standards or otherwise be polluted by the discharge."

Four classifications of ground water are established in the standards.

I. GAA - a) Existing or proposed public drinking water use without treatment (includes some general quality limits).

b) Areas classified as GAA may be suitable to receive discharges of domestic sewage or wastes from acceptable agricultural practices or clean water discharges.

c) All ground waters in existing and proposed public water supply watersheds are classified as GAA. For graphic purposes a distance or radius of 1,000' around all existing public water supply wells is also classified GAA.

II. GA - a) May be suitable for public or private drinking water use without treatment (includes some general quality limits).

b) Areas classified as GA may be suitable for discharges allowed in GAA areas and septage (septic tank pumpings) and other wastes of human or animal origin. Such waters may also receive discharges of substances of natural origin or materials which easily biodegrade in the soil system and pose no threat to untreated drinking water supplies.

c) The majority of the State falls into this classification because no discharges inconsistent with this class presently exist to those groundwaters.

III. GB - a) May not be suitable for public or private use as drinking water without treatment since the ground waters are known or presumed to be degraded.

b) Areas classified as GB may be suitable for receiving discharges allowed in Classes GAA or GA and in addition certain treated industrial process waters. There must be no violation of adjacent surface water standards and such discharges should not preclude the future use of the ground waters for water supply.

c) Ground waters classified as GB are located in areas where historical industrial or residential development has or is likely to render these ground waters unsuitable for drinking. These areas are generally under all of our densely developed urban areas.

IV. GC - a) May be suitable for certain waste disposal practices because land use of hydrogeologic conditions render these ground waters more suitable for receiving permitted discharges than development for public or private water supply.

b) Class GC areas may be suitable for all discharges allowed in areas designated as Class GAA, Class GA, Class GB. Class GC areas may be suitable for other discharges operating under a discharge permit, as long as such discharges will not cause a violation of an adjacent surface water classification.

c) There is a present and continuing need to allow discharges to the ground which are currently best treated by making use of the restoration or attenuation characteristics of the soil and subsurface hydrogeologic conditions. The best places to meet this need in Connecticut exist in limited areas of the State where specific land use and hydrogeologic conditions exist that may be most favorable to the acceptance of such discharges. Those areas generally have greater than 10' of unsaturated fine grain deposits and the existing land uses are compatible with such discharges. In many Class GC areas, the historic waste disposal practices may have, for all practical purposes, permanently rendered the groundwater unsuitable for drinking water without treatment, and/or the development of large yield and high quality water supply from the aquifer conditions is unlikely. A limited number of such areas exist throughout the State, but it is in these areas where we will consider and encourage landfill siting and other significant ground discharges.

These policies and standards set use requirements or limits but do not control actual discharges. Individual discharges are carefully controlled by our State permit and enforcement program. Permit issuance is, however, controlled by the standards and no discharges inconsistent with a standard may be allowed. No permit will be issued which alters existing use or potential use even in GC areas without full control of the zone of influence of a discharge.

The standards also do not specify actual value limits for chemical constituents but rely on drinking water standards to define that quality suitable for drinking without treatment. The standards and policies will not have to be revised everytime a new level of pollutant is determined. Permits for treatment systems would have to be revised to reflect such changes if necessary.

The water quality standard system allows for revision to the standard on a case-by-case basis through a public hearing process. If a discharge was proposed to ground waters classified as not suitable for receiving waste water discharges, the applicant would be required to go through the process of revising the standard on the basis of social, economic, and environmental issues before a permit application could be considered.

At present, 2 of our 5 major basins are classified (see attached documents). One will be adopted in July,the last two in September. The process has cost the State in excess of $620,000 (21 man years) since 1979 and will entail a projected annual maintenance and update cost of 2 man years.

To supplement these standards, and pollution control statutes, several new laws were enacted by our General Assembly this year to control certain needed aspects of ground water pollution. These Acts include: regulation and monitoring of fuel storage; prohibition of certain toxic septic systems additives or cleaners; authority to require polluters to provide potable water to those affected by his pollution and provides for grants to municipalities for providing water to persons where pollution sources are unknown; and the Water Diversion Act which includes the requirements for permit for ground water withdrawals over 50,000 gpd.

The primary obstacle encountered by the State was the general public's lack of appreciation and understanding of the need to identify areas potentially suited for waste disposal(i.e. class GC). The concern becomes much greater, of course, when sites are selected and the neighboring residents believe the classification is advocating pollution.

A second obstacle encountered is the ability of the State to verify, by ground water quality monitoring, that certain quality goals exist or will be achieved. Ground water monitoring needs in Connecticut are as a result, currently being re-evaluated. Like many other states, considerable data is not being collected by numerous agencies and for different reasons. A major problem is the coordination and evaluation of this information. Improved ground water data management is a major State objective.

The role of the federal government should be that of encouraging the development of necessary state programs, providing financial support to state programs, conducting ground water research, technical assistance, coordination and dissemination of information, maintaining a nationwide ground water data base and computer facilities for data management, and a continuation of the data collection and assessment efforts of the U.S.G.S. In addition, research should be accelerated on investigation of human health impacts from trace organic pollutants and the government should consider imposition of a nationwide ban on certain chemical additives now being promoted as septic system cleaning or degreasing agents.

Institutional arrangements for State ground water quality management programs should remain the prerogative of the states because of the differing and unique legal, hydrogeologic, climatic, economic and social conditions in each state. However, federal ground water objectives should be developed and applied consistently across all of its related programs. The various Federal laws pertaining to ground water should be reviewed within the scope of their reauthorization this year to establish these objectives and provide coordination between the Clean Water Act, Safe Drinking Water Act and the Resource Conservation and Recovery Act. I feel that the Clean Water Act should be the primary vehicle used to establish ground water quality goals and objectives with the Safe Drinking Water Act and RCRA used to implement specific portions of the goals such as drinking water use and hazardous waste disposal criteria.

I would like to thank you for this opportunity to present our program and concerns on ground water management to the committee.

Robert S. Moore
6/18/82

Testimony for the Toxic Substances and Environmental Oversight Subcommittee
Senate Environment and Public Works Committee

California Water Resources Control Board

Written testimony to given by Clint Whitney, Executive Director
at July 27, 1982 Hearing.

Mr. Chairman, Senators. Thank you for the opportunity to present testimony on the extent of ground water pollution in California and the need for adequate protective measures. You are to be congratulated for your foresight in exploring the need for such legislation.

I. EXTENT OF GROUND WATER POLLUTION IN CALIFORNIA

California draws about 40 percent of its water supply from ground water basins. In recent years we have become increasingly concerned about the level of toxic pollutants found in these vital water supplies. About one-fourth of 300 East Central Valley water wells are contaminated by the pesticide DPCB. Over 50 San Gabriel Valley wells were taken out of production when tests found the common industrial solvent TCE. A modest effort to find potential problems in the Sacramento area discovered that about 50 percent of the sites checked--military bases, rail yards and other likely targets--required follow-up action to assess damage from improper disposal practices.

Our experience has been that when we have looked intelligently for possible problems, in a high percentage of cases we find poor disposal practices, threats to groundwater quality and--in some cases--the need for costly cleanup activity.

Attached is a staff report on known ground water pollution problems. Many of these sites were found by the ongoing enforcement program operated under California law by California Regional Water Quality Control Boards. We don't know if these are the bulk of the problem or the tip of the iceberg.

We would like to know.

Current state financial difficulties preclude the level of effort needed to inventory actual and threatened ground water problems. I am not talking about a monitoring program that covers every aquifer and well head. Our experience with that type of monitoring has not been productive. However, where we have targeted monitoring to those locations likely to have a problem, staff time has been well spent. Our water quality professionals know where to look--military bases, rail yards, chemical manufacturers, pesticide formulators and similar operations. Unfortunately, we don't have the staff to either inspect these locations or conduct needed followup investigations.

II. RESPONSES TO SPECIFIC INCIDENCES OF GROUNDWATER POLLUTION.

A. DBCP in Lathrop California and East Central Valley Ground waters

In 1979, Central Valley Regional Board staff began investigating disposal practices at the Occidental Chemical Company pesticide formulating facility in Lathrop, California. They found a horror story of corporate irresponsibility. Company officials intentionally violated waste discharge requirements, knew of the illegal discharge for many years and submitted incomplete monitoring reports.

A key finding at the site was that the pesticide DBCP migrated into ground waters. At that time, conventional scientific wisdom was that DBCP would not percolate through soils. Regional Water Quality Control Board staff alerted health officials and tests were begun in other areas of high DBCP use. About 3,000 samples were taken. About 1/4 showed measureable amounts of DBCP. Eastern San Joaquin Valley from Stockton to Kern County is affected. Other testing revealed limited contamination in Oxnard, the Santa Ana River and Coachella Valley.

For the Lathrop pollution, Occidental was taken to court by the Regional Board. After about one year of negotiations they agreed to clean-up measures and payment of $2.8 million to reimburse state and federal governments, add to the State Water Pollution Clean-up and Abatement Account and finance environmental research. Clean-up costs are estimated to exceed $20 million.

For the East Central Valley wells polluted by DBCP use, the California legislature made $30 million available under a loan program. The money will either be used to restore the ground water to healthy condition--DBCP volatizes upon contact with air--or provide alternate water supplies.

Questions and issues raised by the DBCP experience include:

1. Given the misinformation about DBCP behavior in soils, how many other widely held beliefs are in error?
2. Who is liable for the damage? Industry? The regulators who allowed DBCP use? The farmers who used it?

B. Aerojet Facility, Rancho Cordova: Rancho Cordova Ground Water Contamination

Another major ground water contamination case involves the Cordova Chemical Company and its parent Aerojet-General Corporation, Sacramento County. Cordova manufactures pharmaceuticals, herbicides and paint constituents. Aerojet-General is one of the nation's largest producers of liquid and solid propellant rocket engines.

Regional Board evidence showed ground waters beneath corporation lands were polluted with phenols, perchlorate (a component of rocket fuel), trichloroethylene (TCE, an industrial solvent), and numerous other suspected carcinogens.

The Board found that "... the corporation by plan, design or gross mismanagement, have knowingly, willfully, or negligently discharged hazardous wastes and have polluted ground water in reckless disregard of public health, safety, and resources." The matter was referred to the Attorney General.

Investigation is underway to define the hydrogeology and extent of ground water impairment at Aerojet. The company developed plans to lessen the spread of contaminants. A pilot cleanup project began in mid-1981.

To protect public health, monitoring of wells continues. Bottled water has been used for drinking purposes since August 1979. A water supply line from the nearby City of Folsom was in place by the end of 1981. Final cleanup of contaminated soil and ground water is expected to take several years.

Our Aerojet experience raises these questions and issues:

1. Is there a federal liability, as Aerojet has asserted, for problems generated from federal research?
2. How can financially strapped government agencies provide the type of proof needed to both convince courts of the extent of damage and reassure the public that the extent of the threat is known?

C. Santa Clara Valley (San Jose area) pollution from electronics manufacturing.

In December 1981, employees at Fairchild Camera and Instrument Corporation discovered a leak as they were replacing a storage tank. A mild carcinogenic industrial solvent (1,1,1 trichlorethane) was found at concentrations of up to 6000 parts per billion under the San Jose site. Soon afterward Fairchild reported contamination from another industrial solvent (TCE), which has a health standard of 5ppb, of up to 900,000 ppb at one other Santa Clara Valley site and lower levels at three others.

One by one 23 other electronics firms came to the Regional Water Quality Control Board with similar problems. Today, 23 industries are known to have polluted the upper aquifers in the area. And you must remember these are the firms willing to come to us and face up to the problem. We have no way of knowing if other firms have been less responsible. Questionnaires have been sent to 1600 electronics firms, chemical suppliers, metal plating shops and others known to handle hazardous materials. Response is required under the California Porter Cologne Water Quality Control Act.

Of the 1000 responding, 50 are targeted for a leak detection program. We hope to continue the program through all 1600 firms.

To prevent future problems, the Regional Board developed, in coordination with local officials, a model ordinance for hazardous materials handling.

The cleanup at Fairchild forced us to choose between the lesser of two evils. The ground water involved supplies drinking water to thousands of San Francisco Bay area residents. To protect that resource, the contaminated water is treated then pumped at the rate to 2000 gallons per minute into San Francisco Bay, where it will be diluted. It is not a happy solution, but Regional Board officials believe it is the only one available.

D. Military Bases, Central Valley

In identifying high priority targets for checks on possible toxic pollution, the Central Valley Regional Board visited several military facilities. Military authorities have been cooperative with state officials and responsive to the need for adequate clean-up measures. They are also likely candidates for problems, especially air bases which handle sophisticated fuels and other chemicals related to modern military hardware.

We mention them here because any national/state partnership developed to protect ground waters must decide how to regulate on military bases. We also mention them because EPA proposed amendments to the Clean Water Act would exempt federal institutions from state regulation, a step in the wrong direction.

III. APPROPRIATE STATE AND FEDERAL ROLES

California already has some authority to protect ground waters under the same law and system established to protect surface waters. However, there is a gap between our authority and the staff available to implement that authority. Nine Regional Boards issue waste discharge requirements on a discretionary basis. California law also bars any discharge that threatens the beneficial use of water, be it on the surface or below. The program provides a measure of protection and can expand as our knowledge of threats increases. Any federal approach to ground water should not preempt this authority.

It is difficult to become more specific in terms of federal and state roles when the major stumbling block is financial rather than institutional. We do not at this time have funds to adequately assess the nature and extent of ground water threats. And our experience tells us that cleanup costs dwarf assessment costs. Our tentative explorations of the nature and extent of ground water problems leaves us with a growing certainty that:

1. The problems are widespread
2. The problems are serious
3. It's going to be expensive

Budgetary restraints are also widespread and serious. And, perhaps even more disquieting, ground water problems are likely to become more serious until we face up to them. I am not talking about preventing future pollution. I am talking about pollution already in the ground. The longer we wait, the more it percolates, spreads and is likely to move into drinking water supplies.

In line with this, California was disappointed in the recent EPA policy group memorandum on ground water. We agree that EPA has substantial authority to protect ground water, that there is no good way to estimate the extent to which the nation's ground waters are contaminated and that EPA should cooperate with the states.

We find their plan of working with the states to develop ground water strategies, however, lacks any real promise of progress. We need resources; more importantly we will need even more resources in the future. Congress should give EPA sufficient funds to implement existing laws and assist states in addressing the problem.

First and foremost, we need funding to conduct an adequate and systematic search and evaluation of ground water threats. We have already conducted preliminary searches, surveys and other preparation work. The findings show that ground water pollution problems exist with a frequency that dictates a full effort. No other conclusion is possible given the litany of horror stories that any responsible official can parade before you.

The search should be conducted by targeting likely sources for inspection and assessment; conducting the inspections; ordering those responsible for the site to conduct tests when evidence of a problem exists and using existing authority when significant problems are found. Experience with this effort would provide information about whether we need new laws or new programs to protect our ground waters.

We could also be implementing some preliminary pilot programs to test different approaches to solving ground water problems. Along those lines, S.B. 2131, which would protect a ground water recharge area, is a worthy effort to solve a serious problem. Implementation of the bill would provide needed experience with this approach to ground water protection.

The bill's use of the "sole source aquifer" concept would not work in California, with its highly developed and intertwined surface and ground water supplies. For example, the concept would distingush between an aquifer that provides the sole source of supply for 100,000 people and one that provides 10 per cent of the supply for one million people. In California, the loss of either would be tragic.

Lastly I would like to talk about the probable alternative to adequate ground water protection. The loss of ground water supplies would require replacement, most likely from either new surface water development or other aquifers. However, California surface water supplies are already heavily used and subject to yearly drought/rainfall cycles. New development would be expensive. Reliance on aquifers outside the area of use raises a host of political, economic and institutional questions that will take years to straighten out.

The solution of choice is to protect the resource. Otherwise we face a period of increasing demand with the threat of major losses to our supplies.

CHEMICAL MANUFACTURERS ASSOCIATION

ORAL STATEMENT OF

FREDERICK W. STEINBERG
SENIOR ATTORNEY
PPG INDUSTRIES, INC.

ON BEHALF OF THE
CHEMICAL MANUFACTURERS ASSOCIATION

BEFORE THE
SUBCOMMITTEE ON TOXIC SUBSTANCES
AND ENVIRONMENTAL OVERSIGHT
OF THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

July 28, 1982

2501 M Street, NW • Washington, DC 20037 • Telephone 202/887-1100 • Telex 89617 (CMA WSH)

Good morning, Mr. Chairman and members of the Subcommittee. My name is Frederick W. Steinberg. I am Senior Attorney with PPG Industries, Inc. in Pittsburgh, Pennsylvania. With me today is Mr. Alan Egler, Technical Services Engineer with E. I. DuPont de Nemours & Company, Wilmington, Delaware. I am speaking today on behalf of the Chemical Manufacturers Association (CMA). CMA is a nonprofit trade association whose company members represent more than 90% of the productive capacity of basic industrial chemicals within this country. Mr. Egler and I are both members of CMA's Ground Water Task Group.

I am here today to discuss CMA's view of managing ground water as a resource and the respective federal and state roles associated with this effort. We believe there is a need for a ground water management system that can protect public health and the environment, while responsibly maintaining multiple uses of the resource.

CMA began work on the ground water issue in 1979 knowing that society's uses of ground water had, in some cases, changed its quality or quantity. CMA concluded that ground water must be managed to prevent adverse effects on the many valuable uses of ground water. By use, we mean not only withdrawal of ground water, but activities which impact ground water.

CMA is developing a concept of managing ground water by its classification according to existing and future uses. We are still seeking input from other public and private experts. Although we do not intend to present this concept as either a panacea or as "set in concrete", CMA believes this concept offers several advantages that I will discuss this morning.

CMA expects to participate in continuing discussions throughout what we hope will be a thorough public examination of ground water management alternatives.

GROUND WATER CLASSIFICATION BY EXISTING AND FUTURE USES

CMA strongly believes that the most practical and technically feasible approach to ground water management is a state administered management system which employs use-classification as the basis for preserving ground water's multiple uses. The federal government's role in this system would be to assist states in developing Ground Water Management Plans by providing information and technical assistance. The federal government should also harmonize existing environmental programs that may affect ground water. CMA understands that the latter effort is receiving serious study at EPA.

The multiple use classification system offers perspectives and practical advantages not available under other proposals. First, CMA believes it is fundamental that the multitude of ground water uses be acknowledged if we are to more effectively manage and protect this resource. Other systems that would classify ground water as if it were to be reserved for a single use (e.g., drinking water), irrespective of actual use or need, fail to account for the fact that ground water differs in utility, depending upon local needs and geologic setting. Such systems would curtail other essential ground water uses or other productive human activity, without any demonstration that the presumed use would match the actual need.

One of the most important advantages we see in classifying ground water by use, is the ability to protect adequate ground water for future drinking water needs. As part of the classification process, a determination should be required that future drinking water supplies are fully adequate before allowing ground water of drinking water quality to be used for another purpose.

A use-based classification system provides individuals responsible for managing ground water with a basis for planning and taking action. Those who utilize ground water by withdrawal or otherwise affect ground water must be responsible for the protection of the resource within its classified purpose. For example, chemical manufacturing should be permitted above an aquifer classified for drinking use provided that environmental protection measures will be effective in preventing impairment of this designated use of the aquifer. Thus, this approach does not imply that the constituents found in classified ground water will remain at the same concentration or decrease in concentration. Rather, a classification system would ensure that the amount and type of man induced constituents in the ground water do not cause the classified use to be impaired.

Another advantage of a use-based classification system is that it can be responsive to new or changing uses. Only ground water currently in use or reasonably shown to be needed for a specific purpose in the future need be classified. Other ground water without uses would remain protected and should be left unclassified until a need arises. In this way, ground water supplies for new uses can be provided and the management system can adjust to shifting ground water needs over time.

INFORMATION NECESSARY TO CLASSIFY GROUND WATER

Establishing a sound information base is an important first step in a use classification system. The system CMA is developing offers a very real advantage in its reliance upon largely existing data available from federal and state agencies such as the United States Geological Survey, the Water Resources Council, United States Environmental Protection Agency, State Geological Surveys, and area-wide water quality management plans developed pursuant to Section 208 of the Clean Water Act.

In beginning the process of classifying ground water, at least the following data would be considered: existing uses of ground water; the geological/hydrological setting (information on soil, rock, ground water quality and quantity, flow direction and rate, recharge, seasonal variation, yield, and regional hydrology); alternative water supplies; and projected population growth and use patterns. Existing information of this kind can be used by each state to build an expandable foundation.

POSSIBLE GROUND WATER CLASSIFICATION

As the classification effort proceeds at the state level, many use classes would be needed to reflect the many potential uses of ground water. Let me list an abbreviated set of uses.

- Agriculture
- Business: Industrial
  Commercial
- Consumptive Use with Limited Waste Discharge
- Mining and Energy Development
- Drinking Water
- Municipal
- Waste Management

Additional classes could, of course, be devised when necessary to reflect local ground water needs. CMA recommends that the public have an opportunity to comment on all draft State Ground Water Management Plans, including the classification system.

COMMENTS ON S. 2131

CMA believes that a comprehensive, multiple use approach provides an excellent vehicle for managing ground water resources. In contrast, S. 2131 is undesirably narrow in its focus on a single, albeit important, use of a ground water resource. It fails to recognize other uses of ground water and may impose more stringent controls than necessary to protect sole source aquifers.

- Specific concerns with S. 2131 include:
    1. The degree of federal control over the contents of a State Ground Water Management Plan and the state's eligibility for financial aid in developing and implementing those plans.
    2. The concept of "no growth" in ground water recharge areas which cover vast portions of this country, with no consideration given to existing techniques for protecting ground water from undesirable environmental side effects of industrial, commercial, and other essential human activities.
    3. The requirement that the states assess the impact of human activities on both ground water and surface water quality. This requirement implies that current activities, even though specifically authorized and regulated by permits, would be undercut. One example would be discharges authorized by National Pollutant Discharge Elimination System, pursuant to the Clean Water Act.

In conclusion I would like to review what the Chemical Industry is doing to encourage ground water protection. CMA's goal is to participate in the regulatory and legislative processes and provide a necessary forum within the industry so that common goals can be reached and acted upon. CMA was active in the EPA Ground Water Workshops in June 1980, and has maintained close contact with the Agency's activities ever since.

CMA recognizes that added emphasis on education of both member companies and the public sector is important. For example, CMA has published and is preparing additional special reports explaining ground water technical and management fundamentals and their relationship to the development of a national policy.

Thank you Mr. Chairman and members of the Subcommittee. CMA requests permission to submit, before this hearing record closes, a written statement that will expand upon my remarks made today.
Mr. Egler and I will be glad to answer your questions.

COMMENTS OF THE STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

SAFE DRINKING WATER ACT
REAUTHORIZATION - S. 1866

The State of Idaho is pleased to have this opportunity to comment on the reauthorization of the Safe Drinking Water Act (P.L. 93-523). We regard this act to be an important and essential component to the State of Idaho's program to protect the water resources of the state. These comments will be brief but pointed to the most pressing issues as we see them.

I. The Act Has Helped To Assure Adequate Supplies Of Safe Drinking Water

The primary way the act helps to ensure adequate water supplies is that the act waives federal intergovernmental immunity and thereby subjects federal facilities to state regulation. The most notable application is to the Idaho National Engineering Laboratory which for years has disposed of some radioactive wastes by underground injection wells. These injections, prior to the Safe Drinking Water Act, were immune from state regulation. Once the state of Idaho gains primacy, this facility will be responsible for meeting minimum state standards. The filling of this gap has been an important function of the Safe Drinking Water Act.

II. Adequate Federal Grants Are Not Provided To The States. The Grant Process Can Be Improved By Including Class V Wells In The Allocation Formula For Grant Moneys.

At the outset, it should be said that initial funding to the State of Idaho for preparation of its Underground Injection Program (UIC) was adequate. However, the state will not be able to deliver a competent enforcement program if funding trends and practices continue. The major reason for this is the inequitable fashion used by the Environmental Protection Agency (EPA) to allocate grant funds. Currently, agricultural injection wells (Class V wells) are excluded by the allocation formula. In Idaho, 81% of the inventoried injection wells are used for disposal of irrigation wastewater. Therefore, the overwhelming bulk of Idaho's enforcement activities will be spent on wells for which it is not entitled to receive grant moneys.

III. The Environmental Protection Agency Has Not Provided Adequate Technical Assistance To The State Regarding Class V Wells.

To date, the Environmental Protection Agency has not set any injection standards for Class V wells. This deficiency must be corrected forthwith. Moreover, the EPA should be assisting states with technical information on the practices and environmental effects of Class V well injection operations.

IV. The Term "Unreasonable Risk" in the Changes Found in Section 3(c) and (d) of S. 1866 Must be Defined.

The Department generally agrees with the changes made in this section. The effectiveness of the section depends directly on what is an "unreasonable risk." Therefore, the Department suggests that this term be defined to put all parties on notice of statutory standards.

CONCLUSION

We urge that the Safe Drinking Water Act be reauthorized.

Respectfully Submitted

Darcy Alan Frownfelter
Deputy Attorney General
Department of Water Resources

AMERICAN
MINING
CONGRESS
FOUNDED 1897
SUITE 300
1920 N STREET NW
WASHINGTON
DC 20036
202/861•2800
TWX 710•822•0126
J. ALLEN OVERTON JR.
PRESIDENT

Statement of Peter B. Briggs
On behalf of the American Mining Congress

My name is Peter B. Briggs. I am a Senior Advisor - Government and Industry Analysis, Anaconda Minerals Company, and Chairman of the American Mining Congress Water Quality Control Subcommittee.

I am here this morning representing the American Mining Congress (AMC), a national association of companies that produce most of the Nation's supply of metals, coal and industrial and agricultural minerals.

AMC has followed with interest the hearings that this subcommittee has been holding on reauthorization of the Safe Drinking Water Act, and we appreciate you extending us the opportunity, Mr. Chairman, to express the mining industry's views on the very important matter of groundwater protection.

My statement today has two purposes: (1) to convey AMC's views about groundwater protection and management, including a description of steps that the mining industry is taking to encourage groundwater protection; and (2) to address the provisions of S. 2131, the "Sole Source Aquifer Protection Act of 1982."

Groundwater Protection and Management

Groundwater is one of this Nation's most important natural resources. Approximately 25% of the fresh water used in the United States is groundwater, and it is the primary source of drinking water for about 50% of our population. Because of its importance, this natural resource must be carefully managed to accommodate a host of diverse needs and uses vital to the environmental as well as the economic health and welfare of the Nation.

AMERICAN
MINING
CONGRESS
FOUNDED 1897
SUITE 300
1920 N STREET NW
WASHINGTON
DC 20036
202/861•2800
TWX 710•822•0126
J. ALLEN OVERTON JR.
PRESIDENT

Statement of Peter B. Briggs
On behalf of the American Mining Congress

My name is Peter B. Briggs. I am a Senior Advisor - Government and Industry Analysis, Anaconda Minerals Company, and Chairman of the American Mining Congress Water Quality Control Subcommittee.

I am here this morning representing the American Mining Congress (AMC), a national association of companies that produce most of the Nation's supply of metals, coal and industrial and agricultural minerals.

AMC has followed with interest the hearings that this subcommittee has been holding on reauthorization of the Safe Drinking Water Act, and we appreciate you extending us the opportunity, Mr. Chairman, to express the mining industry's views on the very important matter of groundwater protection.

My statement today has two purposes: (1) to convey AMC's views about groundwater protection and management, including a description of steps that the mining industry is taking to encourage groundwater protection; and (2) to address the provisions of S. 2131, the "Sole Source Aquifer Protection Act of 1982."

Groundwater Protection and Management

Groundwater is one of this Nation's most important natural resources. Approximately 25% of the fresh water used in the United States is groundwater, and it is the primary source of drinking water for about 50% of our population. Because of its importance, this natural resource must be carefully managed to accommodate a host of diverse needs and uses vital to the environmental as well as the economic health and welfare of the Nation.

AMC has spent considerable time and effort studying, discussing and analyzing the subject of groundwater management. We identified specific features that we believe should be a part of any groundwater management policy in response to the Environmental Protection Agency's request for comment on its proposed national groundwater strategy. A copy of these comments is attached to my statement. I will take the time here only to highlight some of the key concepts advanced by AMC.

AMC believes that any effective groundwater management scheme must protect public health and the environment. This, however, does not mean that all groundwater must be restricted to a single use or protection standard. No one set of controls or quality parameters could apply effectively to all the Nation's groundwater or the uses of that groundwater.

Effective groundwater management must consider the usefulness of the resource as it exists. Groundwater quality varies widely within and among aquifers. All things considered, some aquifers are most suitable for sources of drinking water, while others could be best utilized by allowing mineral recovery or some other activity to occur within or over them. Wise management will recognize that the location and individual hydrogeologic conditions as well as the natural quality of groundwaters will, in part, determine the use or uses to which different bodies of groundwater may be put.

Groundwater has been and will continue to be used for, and impacted by, a wide variety of socially beneficial activities, such as energy development, mineral recovery, crop irrigation and fertilization, and waste disposal. A realistic management scheme must acknowledge and be flexible enough to accommodate these and other uses of groundwater.

Management of groundwater for multiple uses and also for the protection of human health and the environment are not inconsistent, mutually exclusive or contradictory goals. They should be pursued and can be achieved simultaneously through effective groundwater management.

Antithetical to multiple use management of groundwater is the policy of non-degradation -- that is, the prohibition of any diminution whatsoever in groundwater quality. Such a policy ignores the varying conditions and possible uses of groundwater. Also, it is inconsistent with technology-based statutes, which are commonly used to protect the environment. Simply mandating zero-pollutant discharge will not make it so. Congress has consistently recognized this and has sought to control, not prohibit, discharges. Federal environmental statutes, which are largely technology based, reject zero-pollutant discharge concepts in their approach to pollution control.

The primary responsibility for managing groundwater use traditionally has resided with the individual states. The occurrence of groundwater and its value as a resource vary from state to state and within individual states. Different states may have different priorities concerning groundwater use and should continue to manage the resource within their jurisdictions accordingly.

There is a direct hydrogeological relationship between groundwater quantity and quality. Groundwater management programs need to recognize and account for this. Quality related management decisions necessarily affect how much of the resource will be available for a specified use. Any attempt to isolate the issue of groundwater quality from questions of quantity,allocations or land-use would implicitly remove from each state's control a substantial portion of its lands. States,therefore,should bear the primary responsibility for developing and implementing groundwater management plans.

The federal government's role should be to identify broad national goals, conduct research and disseminate basic scientific information on potential contaminants, recommend guidelines, and otherwise provide technical as well as financial assistance to the states in their development and implementation of groundwater management strategies. It is AMC's understanding that EPA's soon-to-be-proposed groundwater strategy will accomplish these objectives. We do not feel that new federal legislation in the area of groundwater protection is necessary at this time since the federal government has ample existing authority under such statutes as the Clean Water Act, the Safe Drinking Water Act as presently written, the Resource Conservation and Recovery Act , the Surface Mining Control and Reclamation Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, to assure that groundwater quality is protected.

Mining Industry Efforts to Encourage Groundwater Protection and Management

The mining industry has great interest in groundwater and the development of any plan -- local, state or federal -- to manage this resource. This interest stems from the fact that mining often cannot be conducted without impacting groundwater. In fact, valuable mineral deposits do occur in aquifers. Just as aquifers have discernible locations, ore bodies are located where nature has placed them and the minerals, which are the basic ingredients for most goods in our modern society, must be mined where they are deposited.

AMC has actively participated in the development of groundwater protection and management plans at both the federal and state levels. Specifically, we have presented extensive written and oral information to EPA in its efforts to develop a national groundwater strategy. Individual AMC members have participated in the development of groundwater protection programs in states where mining occurs, such as Arizona and Montana. Companies that mine through the use of injection wells made a significant contribution to the development of EPA underground injection control (UIC) regulations as well as individual state UIC programs.

Also, research about groundwater is proceeding in the industry. For example, AMC is expending significant time and funds to cooperate with EPA and its contractors in an in-depth study of the effects of mining on groundwater, conducted pursuant to the Resource Conservation and Recovery Act.

Individual mining companies are making an effort to educate their employees and the public about the importance of groundwater, the effects of mining on this resource and the efforts being made by the industry to protect it. I have attached to my statement as an example of this effort, a brochure published by one of AMC's member companies about its responsible approach to groundwater protection in the conduct of phosphate mining within the Floridan aquifer.

Comments on S. 2131

S. 2131, the Sole Source Aquifer Protection Act, embodies certain worthwhile concepts. For example, it acknowledges that state and local governments must bear the primary responsibility for developing and implementing groundwater protection plans. Also, the bill recognizes that an appropriate role of the federal government is to provide financial incentives for the local development of groundwater management plans.

The bill, however, contains such detrimental aspects that AMC must strongly oppose it. Our opposition is based on various provisions of the bill and its timing. Specifically, we believe that the ramifications of certain aspects of the bill de facto tread on traditional responsibilities of states and omit a recognition of the various groundwater protection measures available. We also believe that the timing of this bill is premature, especially given the extensive effort by EPA to develop a groundwater policy aimed at implementing in a consistent fashion the federal statutes already enacted.

One of our primary concerns is that the bill implies a non-degradation standard and sets the stage for a no-growth policy. Specifically, Section 1426(g) of the bill declares that each comprehensive management plan "shall be designed to maintain the quality of the groundwater recharged through the special protection area through maintenance, to the maximum extent possible, of the natural vegetative and hydrogeological conditions." Section 1426(g)(1)(F) provides for the prohibition of activities that may directly or indirectly contribute in any way to the degradation of groundwater in the "special protection area watershed;" and Subsection (1)(H) provides for limits on land uses "which might have an adverse impact on water quality and/or recharge capabilities."

The non-degradation aspects of these provisions are inconsistent with technology-based environmental protection statutes. Also, they do not allow for technical or mechanical mitigating measures or for negotiations between drinking water users and others to develop alternative sources of drinking water where the other users cannot relocate.

The policy in the bill does not provide for the development in a given area of other important natural resources, such as minerals. It may prohibit growth or activity on thousands of square miles that could fall within the undefined terms "special protection area" or "special protection area watershed." The bill could be misused by no-growth extremists, not so much to protect groundwater as to stop mineral development or any development over entire basin areas.

Also, the bill promotes indirect federal land use planning. While the bill clearly places the responsibility for development and implementation of "comprehensive management plans" with the states, the federal government retains the authority to approve such plans and federal funding is tied to EPA approval. It takes no stretch of the imagination to see how the federal government would soon find itself in the position of dictating the content of state and and local land use plans.

Furthermore, by allowing the federal government to influence the content of state land use plans (see Sections 1426(g)(1)(G), 1426(i)), this bill treads on the traditional rights of states to allocate the waters within their separate jurisdictions. It must not be forgotten that limitations on groundwater quality inevitably are limitations also on quantity.

Moreover, the bill contains many vague and undefined terms. We wonder, for example, how expansive the "special protection area watersheds" will be when identified. The term "watershed" normally is used in the context of surface waters rather than groundwater. Recharge areas for aquifers do not necessarily encompass entire watersheds, yet the terminology used in the bill would restrict activities in entire watershed areas.

What is meant by the term "any degradation" and how it will be measured and what limits, if any, it will impose also concern us.

Finally, we believe S.2131, although well-intentioned, is premature, especially given the extensive effort by EPA to develop a groundwater strategy to administer existing federal statutes. This effort appears to be nearing completion. It would be wise to analyze EPA's strategy before deciding to pass new groundwater legislation.

Mr. Chairman, this concludes my statement. I would be happy to entertain any questions that you may have.

AMERICAN MINING CONGRESS
ENVIRONMENTAL MATTERS COMMITTEE

Comments on the Environmental Protection Agency's Groundwater Protection Strategy
Proposed November 24, 1980, 45 Federal Register 77514

These comments are being submitted on behalf of the Environmental Matters Committee of the American Mining Congress. The American Mining Congress is a national association of companies that produce most of the nation's supply of metals, coal, and industrial and agricultural minerals.

The federal government has authority to protect ground water quality in specific instances under the Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), Clean Water Act (CWA), Surface Mining Control and Reclamation Act (SMCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund). These statutes are all relatively new and not yet fully implemented (Strategy, p.VII-II); therefore, the limits to EPA's authority under these statutes are not fully understood in either a legal or technical sense. Until an assessment shows where programs authorized by existing statutes have not fulfilled the needs of the nation, the strategy as proposed is duplicative, costly to implement by both State and Federal governments, and unnecessarily restrictive.

The development of a groundwater strategy exceeds the authority granted to EPA under these cited statutes. EPA must, before further resources are expended, justify its statutory authority for developing a groundwater strategy for national application.

The examples of groundwater contamination cited in the proposal may be corrected or prevented in the future by appropriate implementation of existing statutory programs. EPA's documents prepared in support of the proposed strategy show that less than one percent of the total amount of useable water in underground aquifers is presently contaminated as a result of disposal of industrial and other wastes. (Page III-17, Appendices, "Planning Workshops to Develop Recommendations for a Groundwater Protection Strategy"). This would indicate that a national strategy is not needed to control waste disposal. Due to lack of information and analysis to date, no estimate can yet be made as to the extent of contamination from activities other than waste disposal. (Which include groundwater over withdrawal and nondisposal actions, e.g., accidents, abandoned wells, etc.) Thus, EPA is proposing a national strategy to correct isolated problems. Although implementations of existing federal programs may be necessary to address such problems, the need is still unproven for this proposed strategy.

The states have traditionally exercised the authority to manage and protect both groundwater quantity and quality. The development of these state efforts has been in response to the needs perceived by the states. Therefore, some states have done more than others to this point in controlling groundwater quality. As EPA acknowledges at page III-14 of the strategy, nearly 40 per cent of the states are taking or have taken steps to develop specific standards to protect groundwater. In as much as environmental concerns in the United States came to the forefront only in the past decade and groundwater quality had until 1974 (SDWA) not been a subject of any enforceable federal regulation, the progress made to date by the states without federal intervention is impressive. We are confident that, as problems are foreseen in other states, those states will act to solve them equally well.

The great extent of state management of groundwater quality may be recognized best in the contextual framework stated by EPA at page III-14: major sources of groundwater contamination vary from state to state and states emphasize the parameters and levels of protection needed to ensure quality protection in their own areas. Further, as stated at page VII-6, the level of control required for potentially contaminating sources is determinable to a major degree by the natural protection of aquifers due to local hydrological and geological conditions which vary greatly within states and across the nation. The federal overlay of regulation provided under the proposed strategy is not only unneeded but could prove counterproductive as more onerous federal requirements are imposed upon states whose own programs fully meet their needs. Where groundwater problems are actually experienced in individual states and interstate aquifers that have not been appropriately addressed by the states, EPA should direct its resources toward the corrective measures authorized under the cited statutes, including the Safe Drinking Water Act, the Resource Conservation and Recovery Act and Superfund legislation. Implementation of these Congressional mandates would foster advances in the protection of health and the environment without imposing a federal intrusion into state authority.

Technical assistance desired by the states for management of their groundwater quality and quantity can and should be provided by the U.S. Geological Survey. There is usually a direct relationship among quality of groundwater, its quantity, availability and use of groundwater. These interrelationships are fundamentally a hydrogeological phenomenon. The USGS has demonstrated its expertise as the lead federal agency for groundwater management through research, data collection, and providing information for decision-making by states, local governments, and private parties. If there is a need for any further federal activity in groundwater quality management, the USGS is uniquely equipped to exercise this role. The USGS would provide the technical service and assistance to meet state needs in management of groundwater quality as it now does in groundwater quantity matters.

The management of both groundwater quality and quantity are state functions. A major difficulty inherent in the proposed strategy is the implicit usurpation by a federal agency of state responsibilities and authority. The sole authority to allocate waters and control their uses resides in the states. The President's June 6, 1978, Water Policy Reform Message to the Congress, which EPA cites on page I-2 as mandating the proposed strategy, states that it would not be proper that ". . . the Federal government pre-empt the primary responsibilities of the states for water management and allocation,: and also that the "federal water policy cannot attempt to prescribe water use patterns for the country." Decisions on groundwater quality may directly affect the amount of groundwater available for any specific use. Any separation of groundwater quality from issues of quantity and availability would remove from the states a substantial portion of their control of water use.

The American Mining Congress does not endorse the present proposed strategy or having the EPA as the lead federal agency in groundwater management and resource development. We do recognize the need for a national overview to assure effective coordination of existing statutes and regulations as well as appropriate federal support for state groundwater management policies. This federal role is clearly different from the national policy role presumed by EPA in the proposed strategy. As the EPA has presumed this role, we are offering the following comments on the significant features of any national groundwater management policy.

SIGNIFICANT FEATURES OF ANY NATIONAL GROUNDWATER MANAGEMENT POLICY

I. Introduction

Any national groundwater management policy should provide a coherent framework for present and prospective statutes, implementing regulations and their interpretation. For example, the Resource Conservation and Recovery Act, the Clean Water Act, the Safe Drinking Water Act, the Surface Mining Control and Reclamation Act and the recently-enacted Comprehensive Environmental Response, Conpensation and Liability Act should be coordinated to constitute effective instruments of groundwater resource management.

While to some the need for a national groundwater management policy is perceived to be pressing, the fact is that a very small volume of the Nation's groundwater has been adversely affected by human activity.

Multiple use of groundwater and the protection of human health and the environment should dictate management policy. These are not inconsistent, contradictory or mutually exclusive goals; they should be pursued simultaneously. Groundwater management must take into account all factors that affect groundwater. The quality of groundwater cannot be divorced from its quantity, its allocation and land-use decisions that implement its allocation. For instance, site-specific surface water runoff conditions and/or recharge patterns affect groundwater quality and quantity.

The states have historically been the governmental entity to determine groundwater allocations; states should retain, therefore, primary responsibility for groundwater management.

AMC recognizes that without proper controls certain aspects of industrial development pose risks of harm to human health and the environment. Any groundwater management policy should provide effective management of the groundwater resource by maintaining flexibility toward groundwater uses and prospective groundwater-related technologies. The appropriate course to human health and environmental protection is not to abandon economic growth and technological development but rather to manage them effectively.

For example, when an aquifer is assessed/discussed a certain set of descriptive characteristics will evolve, among which will be ambient quality. The ambient quality parameters must be interpreted as an indication of the scope of possible use for the aquifer, not as a classification of the aquifer. Present use and projected use as determined by a scientifically valid study, should be used to establish a use classification, and thereby a set of control parameters for the aquifer. If these designated use control parameters are more restrictive than the ambient quality characteristics, then the aquifer may well be a candidate for clean-up under Superfund legislation, not as an enhancement feature under a management policy. If the designated use control parameters are less restrictive than the ambient quality characteristics, then the introduction of waters containing constituents that approach but do not exceed the limits imposed by the control parameters may be allowed.

II. Policy Goal

Any national groundwater policy should insure that the Nation's groundwater resources are managed to accommodate present and potential national needs, considering the usefulness of the resource as it exists.

Management of groundwater resources entails a number of interrelated concerns, one of the most significant being protection of human health and the environment. In this regard, however, all the Nation's needs should be served. Each groundwater use, including domestic, industrial, agricultural, and recreational uses, affect groundwater quality and quantity in specific ways. In addition, activities such as waste disposal, energy development, mineral development, irrigation and pesticide application will affect both quality and quantity of groundwater and necessitate different specific management approaches.

Furthermore, the quality of groundwater, as it exists, will factor in its prospective management. Groundwater resources which have been historically degraded (in older industrialized, irrigated, and cultivated areas, and in regions where septic tanks have long been in place) must be managed differently from groundwater resources in relatively undeveloped areas. Where, in what condition and in what usable quantities groundwater is found will in part determine its future use.

III. Management Approach

Groundwater management should be predicated on the development of use classes and comprehensive data bases that include potential contaminants by possible source or characteristics.

This approach allows site-specific designation of permissible groundwater use. Such a management approach facilitates the important consideration of the present state of the resource in determining to what uses a given source might be put. As importantly, it logically defines respective Federal and state roles in the management process.

Extensive information about the Nation's groundwater already exists in various sources: the states, academia, industry, consultants, the United States Geological Survey, the Bureau of Mines, the Water Resources Council, the Forest Service, the National Institute of Health and EPA. USGS is the appropriate agency to collect and correlate this data, disseminate relevant information to the states and suggest broad use classes in the process (allowing states to address coherently their overall resource priorities). An appropriate role for the Federal government would be to conduct research and be able to recommend scientifically-based maximum levels of contaminants appropriate to each use class. These recommendations could then be used by the states as guidelines to develop, implement and enforce state groundwater management programs. For example, where groundwater resources are the sole present or potential drinking water source, the maximum level of contaminants might well be so low as to be effectively a non-degradation standard for the permissible use. However, where this isn't the case a classification might be assigned, predicated upon projected use characteristics, not ambient quality characteristics.

Once a complete groundwater resource information base is established, states could make informed decisions about groundwater use designations. Uses consistent with these designations could then proceed. Potentially inconsistent uses would have the opportunity to obtain a variance via such mechanisms as the often-required full disclosure documentation of a proposed industrial project, the description of the site specific groundwater resources likely to be affected by the project, and the anticipated groundwater needs of relevant communities. Within this state/Federal/ division of labor, states would designate use-classes based on site specific hydrogeology to meet their needs. Furthermore, as new situations develop (technologies, industries, agriculture, housing, etc.) states could address them from coherent plans and comprehensive data bases.

IV. Technical Requirements

As stated above, existing value and present or potential use and availability of groundwater resources should dictate site specific management decisions by the states. Of necessity, a range of technical requirements should be assigned for each of the groundwater use classes developed. Alternative technical requirements, however, should be granted when it can be demonstrated that a particular use classification will not be violated by the alternative control proposal.

While many approaches exist, at least theoretically, four major sets of requirements are likely to address the high priority problems of the states:

1. Siting and Design Requirements. Area-wide practices such as septic systems and toxic or hazardous waste

disposal could be effectively controlled by designation of where and how certain facilities should be located, according to the hydrogeological characteristics involved.

2. Best Management Practices. "Rules" specifying best management practices can provide necessary flexibility to tailor requirements to site-specific groundwater situations.
3. Technology-based or Effluent Standards. Under this approach, allowable levels of "discharge" to groundwaters would be specified in terms of scientifically valid numeric limits for each individual use. Industrial uses generally are addressed by such standards, since processes can be designed to accommodate equipment in use, rate of operation and the chemical constituents of the discharge. Given the difficulty of quantifying "discharges" into groundwater, effluent standards are sometimes used to generate design requirements.
4. Performance Standards. Standards not wedded to specific treatment technology can encourage innovative approaches to groundwater controls by simply setting an appropriate performance level which must be attained.

Three kinds of technical requirements, as well as others that might become appropriate (see, e.g. the discussion of incentives, below), would constitute a range of uniform controls for each broad use class on a national basis. Nevertheless, flexibility, in the form of variances, should be part of any overall groundwater management to allow the particular circumstances of an area to be considered in developing appropriate control performance at minimum cost.

For instance, each of the broad industrial use classes -- mining, energy, construction, chemical production, etc. -- will usually encompass a great number of specific processes; e.g. gold mining, silver mining, deep and surface coal mining, etc. Each might require a separate set of performance specifications so that use classifications will not be violated. In addition, to allow for anomalous hydrogeological characteristics of the groundwater resources in question (and/or the specific process to be put in place), variances should be routinely granted, so long as the proposed alternative shows that the requirements of the designated use classifications will be maintained.

V. Federal/State Roles.

The primary responsibility for managing groundwater use should continue to reside with individual states. With very limited exceptions, our Constitutional system grants states sole authority to allocate waters within their boundaries. The occurrence of groundwater and its value as a resource vary from state to state and within an individual state. States have different priorities concerning groundwater use and should continue to exercise their authority to manage the resource within their boundaries accordingly. Where interstate groundwater management issues arise, the states should cooperate in the development of interstate compacts. Quality related management decisions necessarily affect how much of the resource will be available for a specified use. Any attempt to isolate the issue of groundwater quality from questions of quantity allocation or land-use -- e.g. by prescribing uniform national restrictions that may be wholly inappropriate to a given area -- would implicitly remove from each state's control a substantial portion of its lands.

The Federal role in groundwater management should be to identify a broad national goal, recommend guidelines and provide technical as well as financial assistance. If the Federal government assumes more than a support role for the states in groundwater management, it will in fact pre-empt the states' authority to allocate their waters.

The following table outlines appropriate state and federal roles in any groundwater management policy.

FEDERAL ROLE	STATE ROLE
Promulgate national goals	Participation in formulation of national goals
Suggest a broad family of classes of groundwater based on use; develop maximum contaminant guidelines for each use class.	Develop refinements of federal classification system as needed and designate groundwater according to specific use, quality and quantity.
Conduct research on groundwater problems. Develop and disseminate basic scientific information on potential contaminants.	Utilize the information on the potential contaminants for the purpose of managing the groundwater system.
Continue existing role of authorizing interstate impacts affecting multistate use.	Continue to exercise the traditional responsibility for allocating groundwater and cooperate with other states in developing workable interstate compacts.
Provide funds to assist states in development of groundwater management programs.	Develop, implement and enforce groundwater management program.

FEDERAL ROLE	STATE ROLE
Provide technical assistance.	Develop case-by-case approach to permit maximum flexibility.

VI. Economic Incentives

Although not a part of environmental legislation and regulation in the past, economic incentives should be emphasized in groundwater management policy. Indeed, economic opportunities could constitute an attractive and effective means of resolving otherwise difficult state facility siting decisions. Incentives for company-chosen action could take such forms as tax deductions and tax credits. The following are offered as possible goals for which economic incentives could be warranted:

(1) Promote new water conservation technology.

(2) Develop new deep-bed groundwater aquifers for approved limited waste disposal.

(3) Upgrade aquifers currently polluted and not appropriate for proposed use or general public/industrial use.

(4) Reduce use of better quality groundwater; by developing the use of poorer quality groundwater thereby suffering the consequence of more costly industrial product processing.

(5) Relocate current plant facilities away from high quality aquifers to avoid possible contamination, even though the facility has the right to remain place.

(6) Use existing industry managed groundwater monitoring systems to supplement Federal/state monitoring programs.

(7) Return waters from industrial use at levels upgraded above original groundwater quality.

Attachment: Response to specific questions

ATTACHMENT

Response to Specific Questions Posed in the Introductory Material Concerning EPA's Proposed Groundwater Protection Strategy.

In developing its proposed groundwater strategy, EPA laudably sought significant public input through a series of workshops where the public and all levels of government had an opportunity to share views on the subject and provide both a balanced perspective and a proper course for groundwater policy at a national level. Since the Agency has articulated its proposed approach, and has sought further public input, American Mining Congress submits the following in response to the specific questions posed in the introductory material concerning the proposed groundwater protection strategy.

Our own analysis has led us to some conclusions about features of any National Groundwater Management Policy which are similar to those of the workshops and those which EPA has set forth. These are:

- Any groundwater policy must protect public health and the environment.
- It must also accommodate present and projected multiple uses of groundwater.
- Groundwater management must consider the usefulness of the resource as it exists.
- Groundwater policy must be sufficiently flexible to account for individual hydrogeologic conditions, as well as natural water quality at individual locations.
- The location and existing quality of groundwater will in part determine to what use(s) it may be put.
- Economic incentives for states and individual companies, if properly developed, could play a significant role in a groundwater policy.

1. The Need for a Use-Based Approach

Because groundwater has been, and will continue to be, used for a wide variety of socially beneficial purposes, management of groundwater resources must acknowledge a continued need for multiple uses. It is therefore most appropriate that the government base its strategy on multiple uses and on the need for flexibility to accommodate them.

a. Non-degradation is not feasible. The Agency has requested comment on non-degradation. In contrast to the feasibility of the use-based system, a policy of non-degradation, even for individual aquifers, would present serious problems. First, non-degradation is wholly inconsistent with technology-based acts. The inconsistency is most easily seen by considering groundwater systems that are hydrologically connected to surface waters. Consider, for example, the problem of salt water intrusion. If a non-degradation standard for groundwater were applied to the connected surface water, stream water would in many cases experience immediate "violations" (some degradation) on contact with lesser quality groundwater, even though no meaningful change may have occurred in the surface water. The substantial cost of attempting to prevent occurrences having little or no impact on either the environment or public health would be a serious misdirection of environmental policy.

Enforcement would also be a problem. If a series of landowners were aligned along the gradient of groundwater flow, and if some previous activity on the site by prior owners had resulted in poor quality groundwater beneath the site, would the landowners be held responsible for violations merely because they own the land, even if they themselves had not altered the groundwater quality?

However, the ultimate reason that non-degradation is not a helpful management concept is that it is inconsistent with scientific reality. All human activity generates wastes. The question is how to dispose of them. Simply mandating zero-pollutant-discharge will not make it so. Congress has consistently recognized this and has sought to control, not prohibit, discharges. Federal environmental statutes are largely technology-based and specifically reject zero-pollutant-discharge concepts. RCRA does not "prohibit" disposal; it requires promulgation of performance standards "as may be necessary to protect human health in the environment." There is absolutely no statutory support for a zero-pollutant-discharge concept.

In fact, Congress' most recent rejection of this approach involves the Superfund legislation. When originally introduced, the Senate bill expressly contained a zero-pollutant-discharge approach. It was extensively changed in Committee, however, to eliminate that approach and specifically account for federally permitted releases. It was even further modified as a result of efforts at a compromise, which was later enacted. Congress has thus once again recognized that it is the management of discharges that is the focal point of environmental protection efforts, and not politically expedient (but technologically meaningless) statements that no discharge shall occur.

It is also important to distinguish three types of activities having the potential to affect groundwater quality. Activities which are proposed, existing, or abandoned may require different types of controls and different levels of governmental activity to deal with them.

2. Appropriateness of State Strategies

Because groundwater varies substantially from place to place, and because decisions affecting groundwater quality inevitably affect both how groundwater shall be allocated and in many cases how overlying land shall be used, it is essential that states determine strategies for groundwater management consistent with their local needs for varying uses of groundwater. Federal assumption of broad authority in this area would eventually result in substantial involvement in local land-use decisions, something we are certain the Agency does not desire, and something Congress and the American people have repeatedly rejected.

Certainly though, federal analysis of state strategies can highlight areas of state concern and provide a focus for the appropriate federal agencies to target better their assistance to the states in those areas of concern.

3. Use Classification Establishes Clearly Understood Program Priorities

Classifying groundwater by use (rather than by numerical quality standards) has several advantages. First, it provides a clear designation of the societal needs which an aquifer must fulfill. Classification of aquifer for use as drinking water, for example, leaves no doubts as to what is demanded. Use-designation (in contrast to technical specifications), can also be easily understood by large segments of the population who have not had technical training, an important goal of any regulatory program.

When an aquifer is assessed/discussed a certain set of descriptive characteristics will evolve, among which will be ambient quality. The ambient quality parameters must be interpreted as an indication of the scope of possible use for the aquifer, not as a classification of the aquifer. Only present use, or projected use as determined by a scientifically valid study, should be used to establish a use classification, and thereby a set of control parameters for the aquifer. If these designated use control parameters are more restrictive than the ambient quality characteristics, then the aquifer is a candidate for clean up under Superfund legislation, not as an enhancement feature under this management policy. If the designated use control parameters are less restrictive than the ambient quality characteristics, then the introduction constituents that approach but do not exceed the limits imposed by the control parameters may be allowed.

At the same time, use classification implicitly establishes priorities for regulators who need to be effective while conserving their scarce agency resources. For example, designation of aquifer as suitable for waste disposal might not require the same level of ongoing regulatory effort as would, say, designation as sole-source drinking water. Thus, the various agencies can use the classification system to identify those aquifers which require substantial efforts.

Similarly, use classifications are helpful in siting of hazardous waste disposal facilities and other activities which may substantially affect groundwater quality. Those groundwater sources which are identified as either naturally highly contaminated, or otherwise unsuitable for agricultural, process, or other uses, and are isolated hydrologically, might well provide natural sites for hazardous waste disposal activities. Certainly, such classification alone cannot be the final solution, since one must also consider transportation of wastes to such sites, as well as other factors. Nevertheless, classification of groundwater aquifers can assist in quickly identifying appropriate sites for potential waste disposal facilities.

4. Potential Impediments to a Groundwater Classification System

a. Adequate data are available for classification. If one were to be technically precise, to classify groundwaters fully, one could require data of such detail as to make its collection and organization extremely difficult. The American Mining Congress endorses the belief that the level of data required to establish an environmentally effective and administratively workable system is either already in existence or can be obtained without establishing massive new research programs. In addition to the USGS, the Bureau of Mines, the Water Resources Council, the Forest Service, the National Institutes of Health and the states have significant data available for incorporation into federal and state programs on groundwater.

On the economic side,there could be considerable practical difficulties in an otherwise effective use-classification system if that system did not incorporate and encourage flexible use of variance procedures to account for individual circumstances. Many of the complaints surrounding existing environmental regulations involve administrative delay and inflexibility in coping with varying conditions throughout the country. In the case of groundwater, the resource itself is found in conditions that vary extremely from place to place, as to the uses to which it is put. Any system of use-classification that did not make effective use of a flexible variance procedure would pose both economic and political difficulties for the localities in which it operated, and cumulatively for the nation as a whole. If we are to cope effectively with what at this point may be a coming decade of scarcity of water for all uses, our regulatory programs need flexibility and quick response to be effective. Assuming that the data collection issue has been resolved and that an effective administrative variance system is in place, the focus then turns to technical implementation of the program.

b. A broader spectrum of permitted activities needs to be considered. Primarily, we believe the Agency needs to refine the levels of protection and control in guidelines that may be implemented by the states. The three levels of facility controls broadly described at pages VII-7 and VII-8 of the EPA strategy appear to address only a portion of the spectrum of groundwater qualities that presently exist. There are instances where naturally occurring groundwater is so contaminated as to be essentially unusable. In such instances, particularly where the resource is isolated hydrologically from other water sources, waste disposal might well be the primary activity on the overlying ground, rather than the limited activity described.

c. Performance standards are required. As to the nature of the controls that would be recommended to the states, we believe strongly that the emphasis should be on performance standards. Since the use, hydrogeology, and quality of groundwater sources vary so dramatically around the nation, maximum design flexibility is needed to accomplish site-specific goals. Accordingly, emphasis on performance, rather than design standards would provide that flexibility. In this vein, we believe the Agency's classifications of technical approaches listed on page VIII-2 of the proposed groundwater strategy are not really distinct from one another. For example, the discussion of "siting and design requirement" (id.) speaks of "both standards and guidelines" based on the type of groundwater involved. If the suggestion is that siting decisions would be based only on the nature of the groundwater (e.g. non-sole-source drinking water) rather than on its current or projected use (e.g. industrial), then the siting requirements would not be consistent with a use-based classification scheme.

Since it is the state-designated use of groundwaters that is to determine the level of protection necessary to maintain that use, then the siting decision cannot be based solely on the "type" of groundwater, but rather must be based on the uses to which that groundwater is to be put, and the necessary performance specifications to maintain that use.

Likewise, best management practices should be limited to operating practices, and not include design standards as regulatory requirements. It would be extremely helpful, however, if the Federal Government would collect likely expected performance levels for specific designs as a guide to facility construction and pass this information on to the states. The publishing of the performance criteria expected or, as an alternative, specific designs, allows the regulated party maximum flexibility to develop cost-effective engineering solutions. The advantage of integrating this management approach into the technical requirements of the strategy is the institutionalization of cost consciousness into a regulatory program, something which (although EPA has rarely done this effeotively to-date) is needed more and more.

Similarly, in determining the role that technology specifications or effluent standards might play in groundwater strategies, one must look to those approaches that provide both appropriate levels of controls and maximum design flexibility. The suggestion at page VIII-2 is that because "discharges" to groundwater are difficult to quantify, effluent standards are inappropriate and that therefore technology specifications (design requirements) should be imposed. AMC endorses the belief that performance specifications, when properly drafted, can provide all the necessary control parameters which a facility must meet in order to maintain the state-designated uses of the underlying groundwater. While specification of particular technologies provides an easy administrative mechanism, it cannot possibly account for the wide individual variation of groundwater from point to point and therefore, by its nature, builds in higher costs than necessary in the control program.

5. Criteria to Ensure Local Participation

a. Existing state mechanisms governing allocation should provide substantial local input. Since the proposed strategy is to be use-based, we assume for purposes of analysis that local interests are well represented and local conditions are well understood in those state mechanisms which presently allocate groundwater for varying uses. Since the proposed strategy is to be based on use classifications which would be developed by the state water authority now in control of allocation decisions, one could be fairly certain that local authorities will necessarily be involved. From a public policy standpoint, it would be highly inappropriate to develop uniform conditions for local participation that are not geared toward individual differences in state administration. To require, for example, that certain forms of meetings be held to include certain attendees under federally specified public hearing schedules, although possibly appropriate on their face, might well conflict with existing states' statutes which govern state water decisions. In the same manner that federal mandating of groundwater allocation would be an undue intrusion on legitimate state interests, specification of state procedural requirements would likewise interfere with, and quite possibly delay, this important program.

6. A Proposed System for Developing National Groundwater Classification Criteria

a. Workshop development of the classification guidance document assures continued public participation and maximizes the Agency's effectiveness. The system described on page VII-9 of EPA's proposed strategy requires development of a guidance document that would include information on classification models and other technical data that could be used in the classification process. If effectively done, this document could well become a model for groundwater classification. Accordingly, we believe that a high level of public participation is appropriate in preparing any such document at the state level. A workshop approach would certainly be effective use of resources, since it would substantially involve a number of experts and interest groups who would be participating in the development process, without cost to the federal government.

7. Preservation of "Imminent Hazard" Authority

While we have not analyzed in detail every state statute that may bear upon groundwater, we do not believe that any portion of EPA's proposed strategy would impede or preclude in any way either EPA or the states from acting to abate substantial and imminent hazards to human health and the environment.

8. Existing Statutory Authority Will Allow EPA's Proposed Strategy, As We Understand it, to Proceed Expeditiously. We Agree With The Agency That No Further Legislation is Needed At This Time.

With ten years' experience in environmental legislation behind us, some of the most profound and constructive criticisms of environmental legislation to-date have been that the statutes are too detailed and restrictive and do not allow sufficient flexibility for individual problem-solving initiatives. The approach used in developing EPA's proposed groundwater strategy, as we understand it, moves in the direction of a refreshing change. The strategy, if properly implemented, could form the basis of a true cooperative federal-state partnership that could provide American industry with the flexibility it needs to meet the demands of both world competition and environmental protection.

9. Areas of Exclusive State Control

Because of the historic role states have played in managing waters within their borders, it would be inappropriate for the Federal Government to impose any mechanism having the potential to interfere with state water allocation decisions. In the case of groundwater, as EPA itself has noted, the inevitable technical connection between groundwater quality and the quantity available for allocation requires the states to retain exclusive authority to mandate groundwater quality. In addition, the connection between groundwater location and facility siting involves another important state and local function -- namely, land-use planning. Inevitably, if the Federal Government becomes involved in setting groundwater quality levels, both water and related land uses will be limited to some extent. This area is, of course, a highly sensitive one, since both Congress and the American people have rejected federally mandated land-use planning whenever it has been suggested. Most importantly, the extreme diversity of groundwater resources, in both their composition and use, argues against a nationally uniform system of groundwater planning.

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Montpelier, Vermont 05602
Department of Water Resources
and
Environmental Engineering

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources & Environmental Engineering
Natural Resources Conservation Council

A REPORT TO
SUBCOMMITTEE ON WATER RESOURCES
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ON
SENATE BILL S. 2131

"THE SOLE SOURCE AQUIFER PROTECTION ACT OF 1982"

PRESENTED BY
JOHN R. PONSETTO, COMMISSIONER
VERMONT AGENCY OF ENVIRONMENTAL CONSERVATION
DEPARTMENT OF WATER RESOURCES
AND
ENVIRONMENTAL ENGINEERING

August 4, 1982

A REPORT TO THE
SUBCOMMITTEE ON WATER RESOURCES
COMMITTEE ON THE ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ON SENATE BILL S. 2131

THE "SOLE SOURCE AQUIFER PROTECTION ACT OF 1982"

AS IT RELATES TO THE VERMONT GROUND WATER PROTECTION STRATEGY

The "Sole Source Aquifer Protection Act of 1982", as introduced by Senator Patrick Moynihan, outlines a ground water protection planning and management process that would greatly assist Vermont in carrying out the ground water protection program described in the State's Ground Water Protection Strategy. The most important element in the Vermont program is a coordinated state and local aquifer protection area concept designed to identify and protect the aquifers and aquifer recharge areas which supply ground water to public water supply systems. The protection process emerging is remarkably similar to the program outlined in Senate Bill S. 2131. Vermont supports the concept of the proposed program, but is concerned that the applicability of it is too narrowly focused. The problem rests not with the broad "sole source" language found in the Safe Drinking Water Act, Section 1424(a) and (e), but with the guidelines used by EPA to identify "sole source aquifers." We feel strongly that aquifer protection is such a critical component in ground water protection programs that no state, region or municipality genuinely engaged in these protection efforts should be excluded from the program.

The major concern Vermont has with the present bill is that Vermont aquifers would not qualify for sole source designation under the current administrative interpretation. EPA proposed regulations in 1977 "to establish procedures for designating areas where an aquifer is the sole source or principal source of drinking water". They were not adopted, but essentially became the guidelines by which EPA Administrators designate "sole source" aquifers. The proposed rule defined a sole or principal source aquifer as "an aquifer which supplies 50% or more of the drinking water for an area". An area was defined as a "large territory, usually encompassing more than one county". Nine sole source aquifers have been designated to date, and designation of a tenth, the Cape Cod Aquifer, is pending. Those already designated are: the Edwards Aquifer, San Antonio, Texas; the Spokane Valley-Rathdrum Praire, Washington and Idaho; the Northern Guam Aquifer, Guam; the Magothy Aquifer, Nassau/Suffolk Counties, New York; the Fresno Valley Aquifer, California; the Biscayne Aquifer, Florida; the Chatham Buried Valley Aquifer, New Jersey; the Maryland Piedmont Aquifer, Maryland; and the Whidbey and Camano Island Aquifer, Washington.

Vermont aquifers do not fit this definition. They are small, discrete, bounded by our hills and mountains. Some are unconsolidated sand and gravel formations similar to those designated, but much smaller in size, while others are upland and made up of fractures in our bedrock. Most of the Vermont aquifers are located within the jurisdiction of one community;

some cross municipal lines. Although Vermont aquifers do not meet the 50% designation rule, they generally do serve 100% of the consumers in our urban areas or village cores. While not large and regional aquifers designated under Section 1424(a) and (e) of the Safe Drinking Water Act, Vermont aquifers are no less important, and the per capita impact of contamination would be just as serious to Vermont consumers as it would be to people living on Long Island or in Florida.

Vermont is particularly sensitive to the critical importance of the nation's ground water resources. While approximately half of the United States population derives water from ground water sources, nearly two thirds (66%) of the Vermont population relies on underground water sources. Protecting the quality of our resources means protecting public health, but in a rural, small state, it also means protecting an enormous public investment. The burden of correcting a ground water contamination problem with treatment or by source replacement falls heaviest on the small systems which serve less than 10,000 people. The economics of scale are even more dramatic in rural states like Vermont where 94% of the public water supplies in the state serve less than 3,300 consumers each. It appears that it would be next to impossible for systems of this size to generate the funds needed to solve these problems at the local level. Municipalities will surely petition for federal and state assistance. S. 2131 proposes a process which may well be the penny of prevention which would help the nation avoid another multi-billion dollar construction grant cure.

Current water supply planning and source protection funds are so limited that most communities that want to identify, map and protect vital water and other natural resources are virtually paralyzed. For example, the town of Waitsfield, Vermont located in one of the largest and fastest growing ski areas in New England, conducted a comprehensive growth study which resulted in the rewriting of its comprehensive town plan and local ordinances. Desiring to plan and direct growth in an orderly and well thought out manner, the community agreed on channelling growth to one major growth center. To accomplish their plans, Waitsfield recognized the need for an enlarged water system, and also the need to protect any investment in such a system. The town came to the Department of Water Resources and Environmental Engineering for assistance. We helped them identify several possible aquifers. They selected the one which best fit their revised plan, and returned to the State to explore possible funding sources and determine if technical assistance was available to conduct a $30,000 detailed hydrogeological investigation of the preferred site. Vermont has a Municipal Water Supply Planning and Construction Grant Program which funds water supply development or system improvements needed at the local level. The state Project Priority List allocates the funds, which amounted to $2.6 million for the State Fiscal Year 1983. While the state statutes authorize the award of funds for projects (a) "necessary to preserve or enhance the quality of water provided; or (b) to alleviate an adverse public health condition; or (c) to allow for orderly growth and development;" the overall system structural needs and health related problems of 133 other Vermont communities are so great that there is virtually no chance that Waitsfield or any other forward thinking community will qualify for this state assistance for literally decades. We are of the opinion that S. 2131 would be most appropriate and provide an alternative program to address situations of this type.

Vermont has recently completed its Ground Water Protection Strategy and like S. 2131, it is founded on the policy of protection rather than correction. Program responsibility will be shared by existing state regulatory programs and local government, but the primary responsibility is at the local level. As the Strategy says, "Local action is at the heart of and essential to the Vermont Ground Water Protection Program. Communities must decide whether they want to protect the natural quality of their ground water or treat it. Communities will be forced to make important fiscal and political decisions involving land use, water supply planning and management and community development issues." During the development of the Strategy, Vermont conducted a pilot project to test the feasibility of the aquifer protection area approach to ground water protection. The pilot project revealed some very interesting information about Vermont aquifers which we believe should qualify them as "special protection areas" as defined in S. 2131.

The pilot project designed the hydrogeological identification amd mapping procedure, examined the existing and projected land use within the areas and estimated current land values based from the most recently available land value figures for public water supply systems. Two hundred and nine individual areas were identified. They ranged in size from 13 to 2,688 acres. The average size area was 120 acres. The median size area was 58 acres. Approximately 22,000 acres or 0.4% of the land in Vermont are covered by the proposed Aquifer Protection Areas. The analysis of existing land uses revealed the presence of both point and non-point pollution sources. Existing water quality and relationship to surface water bodies which might influence the quality of the underground water source was also determined. We believe much of this work is precisely what the Comprehensive Plan element of S. 2131 calls for. Our assessment of these areas showed that 60% of the areas are partially compromised and extremely vulnerable. While the systems studied serve only 30% of the Vermont population, they provide water to nearly 100% of the people in the towns, villages and hamlets they service.

So in conclusion, the Vermont experience suggests that the potential to initiate effective protection efforts is feasible, and S. 2131 would greatly accelerate these programs. We enthusiastically support, but strongly urge you to broaden the intent and language of the bill so that it will apply to any state or local ground water protection program which is actively engaged in aquifer protection efforts. We thank you for this opportunity to present this report.

VERMONT GROUND WATER
PROTECTION STRATEGY

JUNE 1982

DRAFT

Vermont Agency of Environmental Conservation
State Office Building
Montpelier, Vermont

FOREWARD

The 1973 Vermont General Assembly established that: "It is the policy of the State that ground water resources shall be protected, regulated, and where necessary controlled in order to protect and promote the general welfare of the public". (10 V.S.A. Section 1278) and the "Secretary shall control the pollution of the ground water resources and shall develop a comprehensive long range program to protect these resources which shall be submitted to the General Assembly by January 15, 1974" (10 V.S.A. Section 1279). The 1982 General Assembly amended 10 V.S.A. Section 1279 to state that "any subsequent amendments (to the comprehensive program) shall be submitted to the General Assembly".

The original Vermont Ground Water Protection Program was submitted to the General Assembly in January, 1974. In 1978, the Secretary of the Agency of Environmental Conservation delegated authority to amend and operate the program to the Commissioner of the Department of Water Resources and Environmental Engineering. References to the Department found throughout this document mean the Department of Water Resources and Environmental Engineering and represent that delegated authority.

The State of Vermont has conducted numerous ground water studies and projects that provide the basis of this Strategy. In December, 1980, the Commissioner of Water Resources and Environmental Engineering launched an eighteen month effort to analyze available ground water information and develop the Vermont Ground Water Protection Strategy. The Commissioner and his management staff identified ten principles to guide development of the Strategy and released them for public discussion. The public actively participated in the debate of the Vermont Ground Water Protection Principles. There was widespread support for the general ground water protection approach established by the Principles, but a near universal request for a more detailed program description was voiced. That program description is presented herein and will be transmitted to the legislature during the 1983 session.

It is important to understand that this program outline includes work elements which are not within the authority or expertise of the DWREE. The program outline is intended to be comprehensive and includes recommendations best implemented by other State or local governmental organizations.

DRAFT

THE VERMONT GROUND WATER PROTECTION STRATEGY

WHEREAS, Approximately 66% of the Vermont population consumes water from ground water sources; and

WHEREAS, about 235 communities rely on ground water for their drinking water; 117 communities totally, 118 in part; and

WHEREAS, three hundred and sixty or 94% of the 385 community water supplies in the state serve populations of less than 3,300 people; and

WHEREAS, there are approximately 60,000 individual ground water sources in Vermont; and

WHEREAS, the natural quality of the ground water in Vermont is generally good and potable water can be obtained from the subsurface in most locations in Vermont; and

WHEREAS, natural factors and human activities can and in some places have rendered it unfit for drinking;

NOW, THEREFORE, it is the Strategy of the State of Vermont, that the Vermont Ground Water Protection Program shall be based on the following Principles.

PRINCIPLE 1

Ground water is of critical importance to the State of Vermont and it must be protected through action at all governmental levels.

PRINCIPLE 2

A Vermont Ground Water Protection Program will be developed and implemented as soon as possible.

PRINCIPLE 3

The Strategy will provide for maximum protection and minimum degradation of ground water resources in Vermont.

DRAFT

PRINCIPLE 4

Currently available ground water related information is adequate to initiate and guide the implementation of the program. Appropriate modifications will be made as new information becomes available.

PRINCIPLE 5

Initially the ground waters of the State will be divided into two classes. The principal purpose of the classification system is to provide for different mechanisms of protection based on existing or projected uses, vulnerability, and an acceptable degree of risk. Class I, are ground waters located in high yielding aquifers that will be identified by the lands above or through which recharge occurs. These lands will be identified as Aquifer Protection Areas. All lands that remain contain ground waters of Class II.

At some future date, it may be necessary, although not desirable, to develop a third class of ground water. These waters would be located in contaminated aquifers which cannot through socially acceptable or cost effective technology and practices be renovated. They may also be waters beneath lands best suited for the location of industrial, commercial, or waste disposal activities and subject to a high probability of contamination. These lands might be called exempt aquifer areas.

PRINCIPLE 6

Identifying and mapping Aquifer Protection Areas will be based on existing knowledge of surficial and bedrock geology and hydrological data. Areas will be modified if future scientific and hydrogeologic information indicates that boundary or area refinements are necessary.

Use of the aquifer protection area maps in local and state land use or regulatory activities will occur only if their use and application are publicly discussed and legally adopted.

PRINCIPLE 7

The protection of ground water will be accomplished initially through existing state and local regulatory programs. State regulatory programs include those federal programs delegated to the State to administer.

No new permit programs or permit application review processes will be established unless program operating experience indicates jurisdictional gaps exist and appropriate authority for operation is granted.

Within the existing regulatory programs protection of ground water will be accomplished by adopting standards designed to achieve that objective.

DRAFT

PRINCIPLE 8

The State will encourage local and regional agencies to address ground water protection. As implementation proceeds, the State will provide technical assistance and information to local officials and the regional planning commissions to protect public water supplies using ground water sources. Local and regional officials will be encouraged to incorporate ground water protection concepts into their planning and zoning activities.

PRINCIPLE 9

The strategy will establish appropriate mechanisms to integrate and coordinate ground water protection throughout the existing State programs.

PRINCIPLE 10

Whenever major decisions in the development, adoption, and implementation of the Ground Water Protection Program are being considered, full public input will be sought.

DRAFT

THE VERMONT GROUND WATER PROTECTION PROGRAM

The Vermont Ground Water Protection Program addresses a paramount State concern - the protection of Vermont's ground water resources. The thread which ties all elements of the program together is protection. Protection, rather than correction, seems to be the most economical way to assure that an adequate supply of high quality ground water will be available now and in the future.

The Ground Water Protection Program charts a course for ground water protection and management for the next 5-10 years. It identifies goals and outlines program elements which are based on the ten Ground Water Protection Principles. This program outlines an incremental approach to ground water protection. It also maintains the flexibility to respond to one of the fastest changing areas of natural resource management, and seeks the public cooperation in shaping a long term program that will assure that Vermont has a clean, safe supply of ground water into the 21st century.

Vermont Ground Water Protection Program Goals

The goals of the Vermont Ground Water Protection Program are as follows:

I. To develop and implement a program that will prevent ground water from becoming contaminated and which will correct or properly manage known or suspected cases of contamination.

II. To provide maximum protection and allow only minimum degradation of Vermont's ground water resources.

III. To provide some level of ground water protection for all of Vermont.

IV. To develop the Vermont Ground Water Protection Program with adequate flexibility to respond to the rapidly expanding ground water science and technology.

It should be noted that Vermont's ground water protection program began in 1974. It is dynamic and on-going. Therefore work on many of the elements presented here has already begun. Some, in fact, has been completed, but there is no doubt that much more needs to be done. The Vermont Ground Water Protection Program will include, but will not be limited to the following program elements.

DRAFT

PROGRAM ELEMENT 1

Develop the ground water classification system

Discussion

Principle 5 of the Vermont Ground Water Protection Strategy states that classification of ground water will be based on existing and future uses, vulnerability and an acceptable degree of risk. The Department proposes that ground water be divided into two classes. Class I ground water will be water contained in aquifers that supply community water systems and in high yield aquifers which could be used for future community water supplies. Class II will be all the ground water not categorized Class I. Class I will receive the most restrictive level of protection. Class II will be protected by existing codes, standards, rules and regulations.

The term community water supply comes from the Federal Safe Drinking Water Act and refers to water systems that serve 10 or more connections or 25 or more people year round. They are also called public water supply systems. The term reflects those served and not ownership of the system.

The classification system proposed here is based on initial work done in 1981. It revealed that no easy method was available to separate ground water into the two classes. The following criteria were identified and considered: population served by the system; system ownership; public investment in the planning and construction of the system; cost of rehabilitation of contaminated systems; source(s) of rehabilitation funds; yield capability of the system; and system vulnerability due to aquifer hydrogeology or surface land uses and were applied to the the Aquifer Protection Area Pilot Project described in Program Element 2. The Department considers that it is the first phase of the development of the classification system and work on this system should continue.

Recommended Approach

(1) Refine criteria on which to classify the ground water resources of the state, and divide the resource into two categories.

(2) Recommend Class I designation for all the community water supply systems studied in the Aquifer Protection Area Pilot Project.

DRAFT

(3) Evaluate the need to classify community water supplies not included in the Aquifer Protection Pilot Project into the Class I category. If need present, identify the aquifer protection area around the system source(s).

(4) Evaluate the possibility of a three class system. (See Program Element 2).

(5) Implement the classification system.

PROGRAM ELEMENT 2

Determine if the exempted aquifer concept is an appropriate ground water class. If it is, develop a procedure to identify and map exempted aquifers.

Discussion

A small portion of the ground water in Vermont is contaminated. The 1982 Contamination Incident Study found 73 cases that were recorded in State files or were known to local officials. The Department policy is to prevent future ground water contamination. While our waste disposal and pollution control programs are designed to carry out that policy, we can not guarantee that these efforts will be 100% fail safe. We openly admit that we are taking risks when we site, construct and operate these essential activities - sanitary landfills, land disposal of wastewater and its sludge or septage byproducts, and the disposal of domestic and industrial wastewater in pits, ponds and lagoons. There are also risks associated with many commercial and industrial facilities because of the high use of chemicals in their production processes.

The 1974 Federal Safe Drinking Water Act acknowledged the potential impact of these high risk activities and provided a mechanism to identify the underground sources of water that do not now meet drinking water standards or which are not intended to be used for human consumption in the future. The federal law calls them exempted aquifers. An exempted aquifer is defined as an aquifer that has the following characteristics.

(a) It does not currently serve as a source of drinking water; and

(b) It cannot now and will not in the future serve as a source of drinking water because:

DRAFT

(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible; or

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(4) It is located over a federally defined Class III well mining area subject to subsidence or catastrophic collapse; or

(c) The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

The Department recommends that the concept of exempted aquifers be evaluated for its value to the Vermont Ground Water Protection Program. In addition to the above Federal definition, the Department recognizes that certain lands in Vermont are better suited geologically, and have the necessary physical characteristics to greatly reduce the high risk associated with pollution and waste disposal activities. Potential pollution activities if properly sited, constructed, operated, maintained and monitored on these lands would be far less likely to cause ground water contamination than if developed elsewhere. If an accident occurs, risk would be significantly reduced and the site would be more amenable to containment and clean-up.

Lands over exempted aquifers would not be "free fire zones", that is places where the Department would allow contamination to occur. They would be areas associated with underground sources of water not naturally suited for water supplies, ones already befouled, or ones with the best natural protection barriers to minimize the risk of contamination. State of the art site protection practices and technology would be required.

Recommended Approach

(1) Cooperate with other State and local government programs to examine the positive and negative aspects of including exempted aquifers in the Vermont ground water classification system.

DRAFT

(2) Make a recommendation regarding exempted aquifers in the classification system, and report to the Legislature as soon as the study is completed.

PROGRAM ELEMENT 3

Develop a protection program that maintains the drinking water quality of public water supplies, and protects the public investment in the same.

Discussion

The Department recognizes that "protection rather than correction is the most economical way" to insure high quality ground water for Vermonters. A twelve month pilot project tested the feasibility of the aquifer protection area approach to ground water protection. One hundred and thirty six community water systems were evaluated. They were "municipal systems" serving towns, villages, hamlets and clusters of dwellings. Some were publically owned. Some were cooperatively owned. A few were privately owned.

The project found that 66% of the Vermont population consumes water derived from ground water sources. Thirty percent (30%) of the State population is serviced by the 136 pilot project systems.

The pilot project defined and mapped aquifer protection areas (APAs) for the 136 systems. Two hundred and nine individual areas were identified. They ranged in size from 13 acres in Rochester to 2688 acres in Middlebury. The average size area was 120 acres. The median size aquifer protection area was 58 acres in size. Approximately 22,000 acres or 0.4% of the lands in the State are covered by the proposed Aquifer Protection Areas.

The pilot project designed the hydrogeological identification and mapping procedure, examined existing and projected land use within the areas and estimated current land values based from the most recently available land value figures.

The Aquifer Protection Area concept is the central component of the Vermont Ground Water Protection Program. Its success as a protection mechanism will rest on both public and private sector understanding and implementations of the concept. The actions recommended here identify how the responsibilities might be apportioned. During the initial months of the Program wide discussion of this approach is anticipated.

DRAFT

Recommended Approach

State Government

Agency of Environmental Conservation

(1) Identify aquifers and aquifer recharge areas for all public water supplies.

(2) Determine the degree to which each area is compromised or potentially compromised.

(3) Conduct an economic analysis of ground water protection alternatives - protection (land use controls) vs. correction (treatment).

(4) Identify and list high risk, potentially polluting activities regulated by the Environmental Conservation Agency.

(5) Amend appropriate regulations to prohibit high risk activities from locating within aquifer protection areas.

(6) Develop Aquifer Protection Area Reference Document, and discuss Aquifer Protection Area approach in relation to water supply protection.

(7) Develop and conduct an information/technical assistance program based on the Aquifer Protection Area Reference Document.

(8) Develop and propose approaches to resolve existing or proposed land use conflicts within aquifer protection areas.

Health Department

(1) Evaluate usefulness of APA approach for protecting public water supplies as part of 1982-83 reevaluation of 200 foot isolation distance requirement in the "Public Water Systems Regulations".

Agriculture Department

(1) Determine amount of prime agricultural land in aquifer protection areas.

(2) Determine best management practices for fertilizer and pesticide applications within aquifer protection areas.

(3) Develop guidelines or regulations for fertilizer and pesticide storage, mixing and distribution, if appropriate.

DRAFT

Agency of Transportation

(1) Evaluate and consider usefulness of aquifer protection areas approach to protecting water supplies when siting road salting storage sheds, road salting application rates or new road construction.

Local Government

(1) Consider the aquifer protection area concept with regards to local planning and zoning efforts.

(2) Include aquifer protection area concept in local plans, zoning and subdivision ordinances, if appropriate.

(3) Determine if degree compromised or protected is appropriate and meets towns goals and objectives.

(4) Determine and implement best local ground water protection methods. They may include:

  a. purchase of land involved; or

  b. purchase of the development rights of the land in an aquifer protection area; or

  c. zone lands in aquifer protection areas;or

  d. accept growth and development planned or zoned for area as well as the consequences to the water quality; or

  e. bear the cost of water treatment or source replacement if supply becomes contaminated.

Regional Planning Commissions

(1) Assist towns in developing water supply protection programs.

(2) Consider the feasibility of regional solutions to community water supply needs.

(3) Sponsor or cosponsor technical and legal training seminars on water supply protection.

DRAFT

Academic Community

(1) Develop a ground water research agenda that will address the numerous hydrological, geological, social, political, economic and engineering questions regarding ground water protection. Answers to these questions will assist decision-makers at all levels in the public as well as the private sector. Examples of needed research could include methods that more accurately identify and map water supply aquifer and aquifer recharge areas and the costs and benefits of protection program options.

(2) Implement the research agenda.

(3) Develop a program that will lead to a degree in hydrogeology in at least one Vermont institution of higher learning.

Vermont Extension Service

(1) Disseminate ground water and water supply protection information.

Private Sector

(1) Explore land trusts as a way to balance protection needs with private property interests.

(2) Involve water supply interests such as the Vermont Water Works Association, Green Mountain Rural Water Association, and Vermont Water Well Association, in State ground water protection efforts.

PROGRAM ELEMENT 4

Develop and conduct ground water protection technical assistance programs for local officials, regional planning commissions, water supply planning engineers, State pollution control officials and other interested individuals or companies.

Discussion

Local action is at the heart of and essential to the Vermont Ground Water Protection Program. Communities must decide whether they want to protect the natural quality of their ground water supplies or treat it to maintain drinking water quality. Communities will be forced to make important fiscal and political decisions involving land use, water supply planning and management and community development issues.

DRAFT

State government develops much of the basic natural resource information communities need to make these decisions. It also distributes funds to help local governments provide basic services like water and sewerage treatment.

Recommended Approach

(1) Develop the ground water related information that towns need to make ground water protection decisions and develop a program to effectively distribute it.

(2) Seek assistance of public or private organizations specializing in local assistance programs, including the Vermont Extension Service and Regional Planning Commissions, to promote this program element.

PROGRAM ELEMENT 5

Determine impact of on-site wastewater treatment systems on ground water quality in Vermont.

Discussion

Individual wells in several Vermont communities have been contaminated by nitrates, bacteria, sodium and chlorides. All are contaminants found in sewage. These problems are found where individual on-site wastewater treatment systems are located upgradient or too close to wells. In spite of the fact that Health Department and Protection Division regulations are based on the state-of-the-art standards and sound sanitary engineering principles, recent evidence suggests that improperly sited systems, system densities and an increasing use of non-biodegradable, organic household chemicals are causing ground water contamination. There is sufficient reason to investigate and determine if ground water contamination is being caused by certain factors associated with these on-site wastewater disposal systems.

Recommended Approach

(1) Conduct a thorough review of the scientific and technical literature relevant to on-site wastewater disposal.

(2) Design and conduct an evaluation of a sample of Vermont on-site wastewater disposal systems.

(3) Determine if national engineering and site design standards work in Vermont.

(4) Redesign Vermont standards and criteria as necessary.

DRAFT

PROGRAM ELEMENT 6

Develop a method to determine on-site wastewater treatment system densities appropriate to Vermont ground water protection goals.

Discussion

If Program Element 5 shows that on-site wastewater treatment systems do cause ground water contamination in certain places and under certain circumstances, then it will be important to develop a method to determine system densities appropriate to the various hydrogeologic settings in Vermont.

Recommended Approach

(1) Evaluate the results of Program Element 5.

(2) Develop a method to determine on-site wastewater system densities appropriate to the various hydrogeologic settings in Vermont.

PROGRAM ELEMENT 7

Develop a program that maintains the drinking water quality of non-municipal public water supplies and private, individual supplies.

Discussion

Routine industrial, commercial and residential activities, which use chemicals or produce chemical wastes, store petroleum products, or even dispose of sanitary wastes to the subsurface environment are known to cause ground water contamination problems. The impact on ground water of disposing of wastes in landfills, pits, ponds, lagoons or the land application of septage, sludge and other liquid waste streams is also well documented.

The speed of ground water movement varies greatly from inches per year to feet per day. Characteristics of a contamination plume are difficult to predict without extensive, site-specific hydrogeological investigations. The size, shape, direction, and speed of movement vary from plume to plume. As part of the protection rather than correction philosophy underscoring this program, it is prudent that waste disposal and other potentially polluting activities be monitored carefully in the years ahead.

DRAFT

Most solid waste management, hazardous materials management and water pollution control regulations now require ground water monitoring as a permit condition. Most of these regulations have taken effect since 1980. Water quality monitoring data required by these regulations is just beginning to be forwarded to the regulatory agencies.

Current standards and requirements are designed to greatly reduce or prevent ground water contamination problems, but ground water quality specialists are not certain that these new measures will provide the level of protection needed to protect non-municipal public and private, individual supplies.

Recommended Approach

(1) Apply existing codes to all new construction, on the basis that they provide an adequate level of ground water protection.

(2) Design a 5-10 year monitoring evaluation program based upon data generated by the regulatory programs.

(3) Identify data gaps and design pilot studies if necessary to fill information gaps.

(4) Report on the effectiveness of the codes and recommend changes if necessary.

(5) Adjust codes as appropriate.

(6) Develop coordinated and coexisting plan for abating and regenerating water quality in aquifer if monitoring indicates contamination has occurred.

PROGRAM ELEMENT 8

Amend Agency of Environmental Conservation pollution control regulations to include consideration of aquifer protection areas in permit review criteria.

Discussion

Regardless of whether local government adopts or rejects the aquifer protection area concept, the Department intends to amend its existing regulations to protect the uncompromised aquifer protection areas through its permit review processes. As long as a municipal water supply derives water from wells or springs within an aquifer protection area, the following regulatory programs do not intend to jeopardize the supplies by granting permits to locate any of the following activities or new facilities within uncompromised areas:

DRAFT

Solid Waste Program

sanitary landfills, sludge application sites, septage land application sites, leaching or industrial pits, ponds, lagoons

Hazardous Materials Management Program

hazardous waste storage, transfer or disposal sites

Public Facilities

municipal wastewater treatment or disposal facilities, including lagoons, holding ponds, spray disposal or leaching facilities

Permit Section

injection of wastes into wells, pretreatment pits, ponds or lagoons

Protection Division

wastewater disposal leaching fields, subsurface disposal of industrial or commercial wastes

Recommended Approach

(1) Amend Agency of Environmental Conservation regulations to include aquifer protection area consideration in permit review criteria.

(2) Develop a list of activities to be prohibited within aquifer protection areas.

PROGRAM ELEMENT 9

Evaluate Vermont ground water law and recommend necessary changes.

Discussion

The 1973 Drinkwine vs. the State of Vermont case reaffirmed the long held water rights doctrine of "absolute ownership". It provides that a property owner has the right to withdraw as much water as he/she wishes from a well or wells located on his/her property without regard to the effect of that action on the needs or rights of adjoining property owners or their rightful use of the common resource. The absolute ownership doctrine states that "he who owns the soil owns it to the sky and the depths". As applied to Vermont, the 1855 court case of Chatfield vs. Wilson, held the nature of ground water to be "mysterious" and stated that society was unable to understand or regulate it. Modern developments in the fields of hydrology and geology prove the old

DRAFT

assumptions incorrect. The rationales for a continuation of the absolute ownership rule should be abandoned. The Department recommends that Vermont establish a new doctrine based on reasonable use and correlative rights to the ground water resources.

Another general gap in Vermont law relative to ground water use and management is the lack of integration of surface and ground water in pollution control laws. For example 10 V.S.A. Chapter 47, Vermont's Water Pollution Control Law, historically deals with surface water pollution control. In 1972, a well injection permit section was added to make the Vermont law consistent with the Federal Clean Water Act. The Department recommends that the Legislature and public consider defining the waters of the State such that they include ground water, and that the State statutes be reviewed and revised where necessary to clearly reflect where surface, ground or both waters are to be separately or jointly governed by the statutes.

The Departments of Health and Water Resources and Environmental Engineering recommend that the sale of septic tank additives containing synthetic organic chemicals such as trichloroethane should be prohibited. Some synthetic organic chemicals are known to be carcinogenic, while others are suspected carcinogens. Current information on these chemicals suggest that they are not biodegradable, and that they have densities greater than water. They move rapidly through the soil into underground sources of drinking water. These chemicals have been found in areas of high density residential development where houses rely on on-site sewage disposal systems as well as in aquifers underlying commercial and industrial facilities where these chemicals are used routinely. County governments on Long Island, and the States of New Jersey and Connecticut have passed ordinances and statutes prohibiting the sale of septic tank additives.

Recommended Approach

(1) Develop and propose a new ground water rights doctrine which at a minimum is based on reasonable use and correlative rights to the ground water resources.

(2) Consider defining the waters of the State to include both surface and ground waters.

(3) Propose legislation to prohibit the sale and distribution of septic tank cleaners which contain synthetic organic chemicals.

DRAFT

PROGRAM ELEMENT 10

Investigate, document and maintain records of reported ground water contamination problems.

Discussion

In 1980 the Department identified 2,500 sites in Vermont where petrochemicals and salt or salted sand were stored; industrial, municipal wastewater and agricultural waters were impounded; junk and salvage yards were located. Three hundred and fifty three additional sites for either liquid waste application to the land or landfills and dumps were also found. Oil and hazardous materials pollution statistics indicate 1,125 such incidents were recorded over the last ten years. These figures do not reflect the potential pollution from individual or cluster development on-site sewage disposal sites, nor the few industries that dispose of their waste streams to the subsurface environment. This list also does not cover the past activities or practices that may have contributed contaminants to the subsurface environment.

In 1982, an "Inventory of Underground Injection Practices and Documented Contaminated Cases in Vermont" identified 73 cases of ground water contamination. No systematic way currently exists to document and maintain ground water contamination information.

Recommended Approach

(1) Develop capability within State government to conduct initial site investigations and water quality samples to define ground water contamination problems.

(2) Develop a program or procedure to keep the 1982 UIC/ Ground Water Contamination Incident Survey current.

(3) Review other state level emergency response programs an determine if need exists to establish a similar program in Vermont.

PROGRAM ELEMENT 11

Maintain well log records.

Discussion

10 V.S.A. Chapter 51 licenses water well drillers. Section 1472 of the law states that "each licensee shall keep accurate records on each water well drilled, including but not limited to location, depth, character of rocks or earth formations drilled and fluids encountered, and other reasonable information the Department of Water Resources and Environmental Engineering may

DRAFT

require, and shall file a report containing that information with the Department on forms provided".

The "reasonable information" required of drillers by 10 V.S.A. § 1472 includes the well owners name and address, the location of the well identified on the town highway maps, proposed use of the well, reason for drilling the well, type of well, well depth, well construction details, well yield, and a record of the soils and rock encountered while drilling.

Geologists, hydrologists, engineers, well drillers, industry representatives, planners, State and local officials, members of the academic community as well as individuals regularly call the Department for well data. The Ground Water Section receives an average of five calls a day for this information. The information is used to estimate the potential quantity of ground water in an area for public or individual domestic, industrial or commercial water supplies, or to define the aquifers from which the water is extracted. These data also help in drought contingency planning. Soils and geologic information is used to define contamination problems, to locate economical routes and earth resources for highway construction or to locate safe geological sites for waste disposal facilities. The well logs also aid well drillers in making estimates for new well construction or help property owners or prospective property owners understand the characteristics specific to their wells.

Section 1473 of the law states that a driller shall submit to the Department and the property owner within six months after the drilling a report as required by the Department, which may include the biological and chemical analysis of a sample of water from each well drilled. The analysis may be obtained from the State Health Laboratory under Sections 501 and 503 of Title 18, from private facilities with the consent of the Department, or from the Department itself on payment of a fee set by the Department for each analysis made. Coupled with the physical and quantity data generated by the well drillers licensing program, this quality data would form a comprehensive ground water quantity and quality base upon which wise ground water protection decisions would be made.

Recommended Approach

(1) Continue to maintain the well log records.

(2) Computerize the records for rapid retrieval or manipulation.

(3) Evaluate the need and feasibility of implementing the new well water quality analysis option cited in 10 V.S.A. § 1473.

DRAFT

PROGRAM ELEMENT 12

Enhance the ground water quantity component of the Vermont Ground Water Protection Program.

Discussion

Even in the humid, water rich east, water quantity can be an issue. Droughts can and do occur. According to the Vermont Department of Public Safety, Civil Defense Division, meterologically related water shortages, especially on Addison and Franklin County farms, have occurred in nine out of the past ten years. Localized, temporal water quantity problems due to naturally occurring low yield aquifers, overpumping and interference between adjacent wells are not uncommon.

Ground water heat pumps are becoming increasingly popular in Vermont and if sited close to one another, could pose serious ground water quantity problems. Most systems installed in New England are of the comsumptive type. They withdraw ground water, extract the heat and discharge the water into a nearby stream or wetland rather than returning it to the aquifer. Heat pumps use between 15 and 20 times more water a day than do normal four person households. Future withdrawals could have a significant negative impact on the ground water supplies in Vermont.

Recommended Approach

(1) Continue participation in the United States Geological Survey - Vermont coooperative monthly water level measurement project to maintain water level data to help predict water shortages due to drought, localized overdrawing for consumption or energy generation, or natural quantity shortages problems.

(2) Identify regions or areas in the State where chronic potable water supply shortages occur, locate areas where ground water supplies are abundant and are known to "hold up" during dry periods, and establish a dependable Water Supply Reserve System that could serve as a potable supply resource during droughts, accidents or contamination crisis.

(3) Establish a State-Heat Pump Industry review of heat pump ground water needs and recommend ways to avoid heat pump ground water quantity problems.

DRAFT

PROGRAM ELEMENT 13

Examine potential to coordinate or consolidate ground water aspects of existing State programs.

Discussion

The protection, regulation and control of the State's ground water resources and those land-use activities affecting ground water are presently scattered throughout six divisions of the Department and several other State departments. Ground water data relating to quantity, quality and location are generated in several State programs. The Department's Ground Water Management Section maintains files on water wells, water levels, ground water quality analyses, and existing technical reports and investigations. Special projects such as regional resource studies and the Aquifer Protection Area Project are also conducted by this Section. Other programs with the Department such as the Protection Division, Solid Wastes Program, Hazardous Materials Management Section, and Public Facilities Program, generate site specific investigations of ground water conditions through their existing permit programs.

Ground water quality monitoring is also incorporated into the guidelines and rules of the Protection Division, the Solid Wastes Section and the Hazardous Materials Section rules controlling the subsurface disposal and land application of wastewater and sludges.

Responsibilities related to the siting, construction, operation and maintenance of public and private water supply systems are carried out by three State programs: the Environmental Health Division of the Health Department, the Facilities Water Supply Program and the Protection Division of the Department. All community water systems by definition are under the jurisdiction of the Health Department; however the Water Supply Program provides fiscal and engineering assistance to those community water systems serving municipalities. The Protection Division covers those systems which serve subdivisions and public buildings.

Historically, ground water contamination incidents have not been handled in a uniform manner. When the suspected source of contamination has been determined, the appropriate State department takes charge. The Utilities Division of The Department of Transportation conducts analyses and reviews of water supplies affected by road construction and road salt application. The Environmental Conservation Agency's Hazardous Materials Division and Solid Wastes Section and the Department of Public Safety respond to spills or leaks of hazardous materials. Pesticide and fertilizer storage or disposal problems rest with

DRAFT

the Department of Agriculture. Any incident that threatens public health and involves a public or private water supply system automatically triggers jurisdiction of the Health Department.

The State programs mentioned above are involved in data collection, analysis and management of the ground water resource. State personnel with hydrogeology, engineering and water chemistry backgrounds are present in most of these separate programs which indicates both the continued need for these professional skills and the potential for a more coordinated approach to ground water investigation and analysis.

Recommended Approach

(1) Determine and evaluate the roles of State programs involved with any aspect of ground water.

(2) Propose mechanisms for the consolidation and coordination of these State programs for more effective management of the resource.

(3) Incorporate State protection goals and methods into existing State programs.

PROGRAM ELEMENT 14

Evaluate the hydrogeological skills in State government especially the Health Department and the Department of Water Resources and Environmental Engineering programs, and determine if additional technical skills are needed to review permits and to provide technical assistance to communities or individuals.

Discussion

It is not the best time to expand any State government program. Government managers acknowledge and respect the public voice which is calling for a reduction in the size of government. They are requiring public servants to provide higher levels of services for fewer tax dollars.

Ground water management and protection needs, however, may conflict with this public directive. Implementation of the Strategy is not expected to require new regulations, but the increasing complexity of ground water management and protection will undoubtedly demand an expansion of hydrogeologic skills and knowledge within existing State programs. Review of pollution control permits or the provision of technical assistance for water supply development or waste disposal will not be possible without this broadened understanding.

DRAFT

The Departments of Health and Water Resources and Environmental Engineering employ about a dozen people who have geology or hydrogeology training. Scattered among seven different programs, most of these people hold classified positions. Several have limited service status, and at least one is a tempory employee. Half of these employees hold technical positions. The remainder are program chiefs or have program administration responsibilities.

Recommended Approach

(1) Identify the hydrogeology skills needed to fulfill the State's ground water management and protection policy and program goals.

(2) Evaluate the hydrogeology skills and knowledge currently available with State government.

(3) Report needs and requests to the Vermont General Assembly.

PROGRAM ELEMENT 15

Develop a program to identify public water supply needs, potential aquifers and site potential future supply sources that maximize the public investment.

Discussion

There is increasing evidence and increasing concern that small, financially pressed public water supplies, will be in even greater financial straits if their water sources are contaminated. Treating the supply or replacing the source are the only correction options and both are very costly.

The departments of Health and Water Resources and Environmental Engineering did a preliminary estimate on what it would cost several systems to treat or replace a contaminated supply. In January 1982 dollars, a new well could cost $100,000 to $145,000 for a 100,000 to 500,000 gallons a day system. It is clear that the economies of scale do not favor small systems and hit the small system consumers the hardest.

The treatment option costs depend on the contaminant and the type of treatment required to meet Vermont Primary Drinking Water Standards. For example, granular activated carbon equipment needed to remove petroleum products or organic chemicals from a 100,000 to 500,000 gallons a day system might cost a community $150,000 to $250,000 to install. Operating costs would be an additional $22,000 to $30,000 annually.

DRAFT

Public funds to meet the small system replacement or improvement needs are limited. The General Asembly currently appropriates approximately $2.5 million a year to fund the program. The Department, however, working with the Vermont Department of Health estimates that to upgrade the existing public water supply systems to meet current Drinking Water Standards would cost at least one hundred million dollars ($100,000,000). This figures does not include any potential for growth or unforeseen problems. Vermont clearly cannot afford to compromise existing supplies.

If the existing supplies are not adequate for future needs, additional sources must be located and set aside. The first step is to locate and identify those aquifers with the potential quality and quantity to meet those needs. Testing of the aquifers would focus on those sites with the greatest potential for cost effective development and protection of future supplies.

Recommended Approach

(1) Conduct a public water supply needs study.

   (a) Assess public systems needs.

   (b) Update water use figures for the State.

   (c) Assess individual/small, private systems needs.

   (d) Propose ways to solve public systems problems and reduce costs.

   (e) Revise the Municipal Water Supply Priority List to reflect the identified needs, including a 1982-83 estimate of the funds that will be required to meet the identified needs as well as costs that might be needed to meet normal local or State growth demands.

(2) Conduct aquifer studies to identify the best, potential future ground water resources.

   (a) Develop a schedule of aquifer mapping and evaluation based on the Municipal Water Supply Priority List; and

   (b) Develop a work plan for each priority community. Work plan elements should include the following tasks:

      1. Collect and assess the available data;
      2. Design of a field study program;
      3. Conduct field studies;
      4. Identify recommended sites;

DRAFT

5. Confirm recommended site(s) with limited testing;
6. Publish the report and conduct public meeting; and
7. Encourage local efforts to protect potential source sites.

PROGRAM ELEMENT 16

Develop a research strategy to investigate the applicability of ground water theory to Vermont's geology and coordinate with the State institutions of higher learning and the private sector to accomplish this work.

Discussion

The physical and chemical relationships which exist between the extraction of drinking water supplies, the application of wastes, and the ground water resources need to be better understood. Theories developed for the massive aquifers of Long Island or the New Jersey Pine Barrens may have much or little applicability to Vermont's river valley sand and gravel aquifers and definitely have little in common with our bedrock aquifers.

Knowledge in the discipline of hydrogeology is expanding rapidly at the national level and worldwide. The application of this knowledge to the varied and complex geology of Vermont has just begun. Definitive research could have significant benefits for ground water management in Vermont.

Recommended Approach

(1) Identify ground water research needs and establish a research agenda.

DRAFT

APPENDIX

BACKGROUND INFORMATION

The Vermont Ground Water Protection Strategy document drew heavily on the information contained in the following documents, reports and studies. Copies of any of this material may be obtained from the Vermont Department of Water Resources and Environmental Engineering, Ground Water Management Section, State Office Building, Montpelier, Vermont 05602 or by calling (802) 828-2761.

An Analysis and Evaluation of Ground Water Management in Vermont, Department of Water Resources and Environmental Engineering, June, 1980.

Background Water Quality for Selected Ground Water Supplies: 1978-1981, Department of Water Resources and Environmental Engineering, June, 1982.

Decade of Spill Records, Department of Water Resources and Environmental Engineering, January, 1982.

Organic Chemicals in Vermont Community Water Supplies, Vermont Health Department, April, 1982.

Surface Impoundment Assessment Final Report, Department of Water Resources and Environmental Engineering, October, 1979.

Vermont Aquifer Protection Area Reference Document, Vermont Department of Water Resources and Environmental Engineering, June, 1982.

Vermont Ground Water Pollution Source Inventory, Department of Water Resources and Environmental Engineering, December, 1980.

Vermont Underground Injection Practices and Groundwater Contamination Incident Survey, Marshfield Engineering Services for the Vermont Department of Water Resources and Environmental Engineering, May, 1982.

Vermont Water Use Study, Department of Water Resources and Environmental Engineering, October, 1981.

Stroock & Stroock & Lavan
1150 Seventeenth Street, N.W.
Washington, D.C. 20036

TELEPHONE (202) 452-9250 TELECOPIER (202) 293-2293
CABLE PLASTROOCK-WASHINGTON, D.C.
TELEXES WU 89401 WUI STRCKDC 64238

NEW YORK, NEW YORK 10006
61 BROADWAY
TELEPHONE (212) 425-5200
WU TELEX 126784
WUI TELEX 620367

LOS ANGELES, CALIFORNIA 90067
1801 CENTURY PARK EAST
TELEPHONE (213) 556-2100
WU TELEX 677190

MIAMI, FLORIDA 33132
100 NORTH BISCAYNE BOULEVARD
TELEPHONE (305) 358-9900

August 12, 1982

Senator James Abdnor
Chairman
Senate Subcommittee on Water Resources
4204 Dirksen Senate Office Building
Washington, DC 20510

ATTN: Harold Brayman

Dear Senator Abdnor:

On behalf of the City of Tucson, Arizona, we are submitting the attached "Memorial" concerning S.2131. We wish this resolution to become part of the record your Subcommittee is establishing on this important bill.

Specifically, the City of Tucson endorses amendments to the Safe Drinking Water Act contained in the "Sole Source Aquifer Protection Act of 1982".

The Mayor and City Council of Tucson endorsed these amendments on August 2, 1982. If there are any questions, we would be happy to respond to Committee at your convenience.

Respectfully,

Bruce Kirschenbaum

BK/nrr

Enclosure

cc: Senator Barry Goldwater
Senator Dennis DeConcini
Rep. Morris K. Udall

ADOPTED BY THE
MAYOR AND COUNCIL
AUG 0 2 1982

A MEMORIAL

RELATING TO REENACTMENT OF THE SAFE DRINKING WATER ACT AND TO ITS MODIFICATION PURSUANT TO S.2131, KNOWN AS THE "SOLE SOURCE AQUIFER PROTECTION ACT OF 1982"

TO THE PRESIDENT AND THE CONGRESS OF THE UNITED STATES OF AMERICA

Your Memorialist respectfully represents that:

WHEREAS, clean water is vital to the health and economic well-being of the citizens of this country; and

WHEREAS, the Safe Drinking Water Act is due to expire on September 30, 1982; and

WHEREAS, the current language of the Sole Source Aquifer portion of that Act provides no planning funds, requires no aquifer protection plan and only vaguely defines the effect of a Sole Source declaration;

NOW, THEREFORE, YOUR MEMORIALIST, THE MAYOR AND COUNCIL OF THE CITY OF TUCSON, PRAYS:

SECTION 1. That the Safe Drinking Water Act be reenacted.

SECTION 2. That the following additions to that Act as currently contained in S.2131 "The Sole Source Aquifer Protection Act of 1982" be adopted:

a. Establishment of procedures for the designation of special protection areas as defined by hydrogeology, water quality and land use;

b. Establishment of procedures for the development and implementation of site-specific, comprehensive management plans;

c. Establishment of guidelines for Federal-state cooperation in the planning, funding and implementation of such plans;

d. Provision for planning funds to be provided on a 50-50 matching basis; and

e. Provision for funds sufficient to implement the plans developed under the Act.

PASSED, ADOPTED AND APPROVED by the Mayor and Council of the City of Tucson, Arizona, AUG 0 2 1982.

MAYOR

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

Thomas J. Wilson
for CITY ATTORNEY

REVIEWED BY:

CITY MANAGER

TJH:rh
7/27/82

AMERICAN DENTAL ASSOCIATION

WASHINGTON OFFICE • SUITE 1004 / 1101–17TH STREET, N.W. • WASHINGTON, D.C. 20036 • PHONE 202/833-3036

June 28, 1982

Honorable Slade Gorton, Chairman
Subcommittee on Toxic Substances
and Environmental Oversight
4204 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Gorton:

The American Dental Association welcomes the opportunity to comment on S. 1866, the Safe Drinking Water Regulatory Reform Act. Our comments specifically pertain to language in S. 1866 that would change the criteria for classifying substances as contaminants under primary drinking water standards from those which, "in the judgment of the Administrator, may have any adverse effect on the health of persons," to those which "pose an unreasonable risk to the health of persons."

As you know, fluoride was classified as a contaminant when found occurring naturally at levels more than twice the optimum (0.7-1.2 -- depending on the annual average maximum daily air temperature). Consequently, hundreds of small, rural towns affected by this standard are obligated under the law to defluoridate their water systems to the acceptable level by January, 1984.

In 1979, the American Dental Association adopted policy which states "that based on present knowledge, it is the opinion of the ADA that the natural fluoride levels of drinking water in the United States do not constitute a health hazard." This policy has subsequently been endorsed by the American Medical Association, the Association of State and Territorial Dental Directors, the American Association of Public Health Dentists, and others.

The National Academy of Sciences makes a similar statement in its report Drinking Water and Health: "Epidemiological studies where the water is naturally high in fluoride have found no adverse effects except in rare cases, until the concentration is many times that recommended for added fluoride. ...In addition, sociological studies are needed to ascertain the extent to which dental mottling is regarded as an adverse effect."

Because of this widespread consensus that naturally occurring fluorides do not constitute a health hazard, the Association is confident that if S. 1866 were adopted and its language made the basis for the establishment of maximum contaminant levels, fluoride would not be listed under the primary standards. In fact, the American Dental Association maintains that the current law allows fluoride to be reclassified under secondary drinking water standards.

We appreciate the opportunity to comment on this issue, and hope you will not hesitate to call on us if we can provide any additional information.

Sincerely,

James P Kerrigan

James P. Kerrigan, D.D.S.
Chairman
Council on Legislation

STATEMENT OF CY RHODE, VICE-CHAIRPERSON OF THE GULF COAST REGIONAL CONSERVATION COMMITTEE OF THE SIERRA CLUB, ON S.2131, THE SOLE SOURCE AQUIFER PROTECTION ACT OF 1982, FOR THE SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, U.S. SENATE

5 AUGUST 1982

The Gulf Coast Regional Conservation Committee (GCRCC) is the southeast regional conservation decision-making arm of the Sierra Club and consists of the member chapters--Chattahoochee (Alabama and Georgia), Florida, Mississippi and Delta (Louisiana) and the associate member chapters--Lone Star (Texas), Tennessee and South Carolina. The GCRCC is actively committed for promoting the reauthorization of a strong Safe Drinking Water Act (SDWA) and the protection and conservation of ground water in general. Among the GCRCC's eight issue priorities for 1982 is "ground water quantity and quality." The GCRCC at its 24 July meeting in New Orleans unanimously passed a resolution condemning the language and purpose of S.1866 and H.R.4509, the Safe Drinking Water Regulatory Reform Act, which would gut the SDWA by changing the SDWA's direction from a preventive path to a reactive one, by placing the cost of SDWA regulations on even keel with the benefits of human health, by lowering the water-treatment standard to that now permitted only for public water systems under an exemption or variance, and by eliminating Environmental Protection Agency's (EPA) authority to require the use of a best available treatment technology when a particular contaminant cannot be feasibly monitored.

Notwithstanding the National Drinking Water Advisory Council and EPA, the GCRCC endorses S.2131, the Sole Source Aquifer Protection Act of 1982, and urges its passage.

S.2131 is the first piece of federal legislation that we know which specifically recognizes the relationship between surface and ground water and the need to manage and administer the dual water resources conjunctively.

The bottom-up approach of S.2131 for land use decision-making is also very good. Clearly, the federal government's role under S.2131 is that of a facilitator and not of a dictator. The bill's concept is similar to that of coastal zone management for promoting wise use, development, preservation and conservation of land and water resources. The State serves as the central focus and the critical link between federal and local governments. The bill correctly gives to States oversight responsiblity of the local governments' management of the recharge zones of sole source or principal aquifers. Local government is more likely than any other level of government to act according to what the current situation and pressures dictate, to be unable to respond to long-term problems, and thus to forgo the costs of aquifer stewardship to another generation. Left to the total discretion of local government, land and water use decisions would likely be geared to short-term economic objectives rather than long-term resource conservation objectives. As S.2131 explicitly states, it is much less expensive and difficult to prevent aquifer degradation than to treat it.

Because water resources such as ground water are still generally being managed by a composite of single-use plans of fragmented government agencies and by an ad hoc and piecemeal approach to problem-solving, the comprehensive planning and intergovernmental cooperation which S.2131 would create are much welcomed.

The authority to publicly acquire specific areas in fee simple or in easement for purposes of the comprehensive management plan is an essential option for land use planners and managers. We do not believe that land acquisition is, or should be, a major feature of S.2131. Land acquisition may be more cost effective for preserving critical areas than land use regulations, and we allege, more popular with private landowners than land use regulations. Inland wetlands, the interface of surface water and ground water, are critical areas of ground water recharge and discharge. The value of wetlands preserved in a natural state have a very low value to the landowners as compared to the public. The landowner who is greatly restricted from filling-in and developing his wetlands for private economic gain perceives that he is paying taxes and maintenance costs for land held captive by the public interest and therefore would rather sell his land to the government and have government care for it. Lands may have to be publicly acquired within a special protection area for land treatment of non-toxic municipal wastewater or spreading water for aquifer recharge. Moreover, critical buffer lands and recharge zones targetted for acquisition by a comprehensive management plan may likely double as a State wildlife management area whose establishment would be supported by the large constituency of hunters and fishermen and thus would be politically feasible for the State to support.

We offer two suggestions for amending S.2131. First, the bill needs to stress the quantity side of the ground water problem in addition to the quality side because ground water quality and quantity are interrelated. Falling water table due to ground water mining and/or substantial interference by land development with the natural recharge rate can cause salt water intrusion into freshwater supplies and even the deterioration of a stream's water quality through diminished ground water discharges.

Secondly, the bill needs a provision and a procedure for establishing interstate compacts and planning entities for the management of interstate special protection areas. Surface expressions of aquifers do not recognize state boundaries and can span several watersheds. The federal government has a valid national interest under the commerce clause of the U.S. Constitution for protecting critical recharge zones of interstate freshwater aquifers. Misuse of the aquifer's recharge zone or confined zone in one state can cause adverse impacts to aquifer users in another state. Getting neighboring states which use a common pool resource to cooperate on its utility and protection can be a challenge--more reason for the federal government to get involved in encouraging and assisting in the formation of interstate compacts for the protection of a principal aquifer and subsequently, the long-term protection of the regional economy and quality of life.

In conclusion, the GCRCC believes that the Sole Source Aquifer Protection Act of 1982 would remedy the weakest section of the SDWA and that the time is NOW for its enactment.